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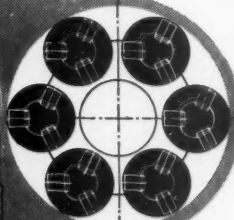
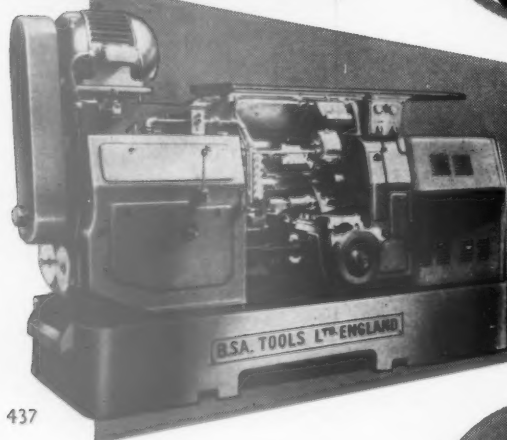
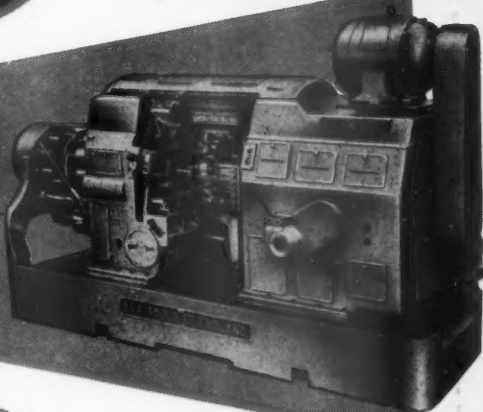
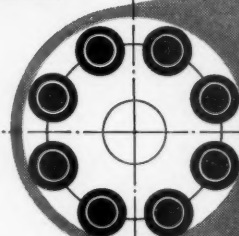
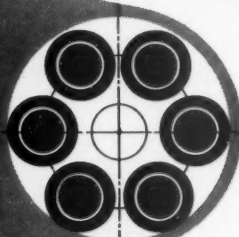
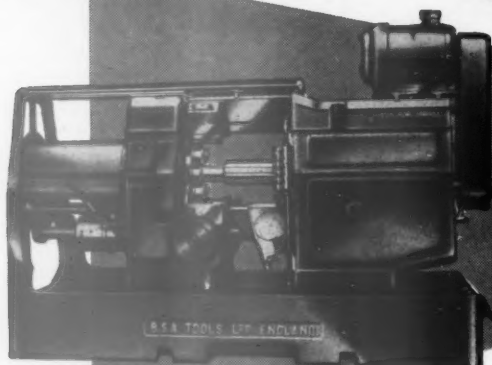
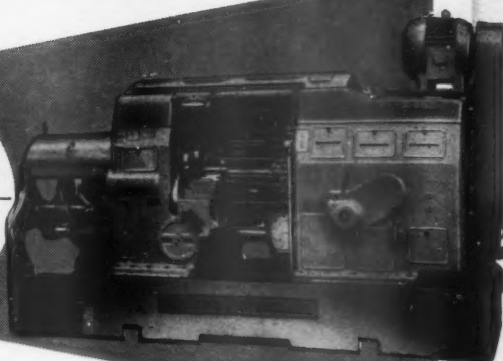
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An Inconclusive Wages Debate

THE recently concluded Trades Union Congress, although it produced fewer fireworks than has been the case on some previous occasions, was perhaps as remarkable for the variations of views expressed as the unanimity of voting on the various resolutions. There was the customary debate on wages and economic policy, with the equally usual condemnation of the attitude of both employers and the Government. On the other hand, perhaps because many of those who participated in the debate were aware of a change in the economic climate, there was in many of the speeches discernible a groping after a more realistic approach to a wages policy. There were suggestions for balancing wages claims with pressure to increase the efficiency of industry, which might well improve the standing of the unions with the public and also provide the means out of which real improvements in living standards could be met. There was also some evidence of realism in the need for co-ordinating trade union wage policy so as to avoid regular advances being offset by increases in prices. Apart from Mr. Frank Cousins, who was still

obsessed with the recent London bus strike and with the strike as an industrial weapon, there seemed to be a growing understanding that the present wages policy of the unions was not as wholly satisfactory as such an audience might have been expected to think it, although no well defined alternative emerged from the discussions. It did become quite clear, nevertheless, that the General Council of the T.U.C. was in no mood to ally itself, even with full safeguards and many reservations, to a policy of wages militancy. There was a very clear emphasis placed on the autonomy of individual unions and against the idea of a central strike fund. Very reasonably the unions felt that their own agreements and rules and the interests of their own members should be paramount and that the right to support a strike should be a matter for individual decision.

Opening Up Tanganyika

THE Tanganyika Government has outlined in a White Paper its proposal to build a branch from the Central Line near Kilosa to Mikumi, some 44 miles southwards. This was one of the projects considered by the Transport Advisory Council at its meetings in June; and £800,000 was recommended to be spent on its construction as part of the development programme covered by the £8½-million Loan Act of 1957. The line will carry the produce of the Southern Highlands Province—wattle extract from Njombe, rice, cotton and other crops from Igawa, tea from Mufindi and Rungwe, and possibly pyrochlore from the area south of Mbeya, besides the potential of the Rufiji Basin and the Kilombero Valley where there are indications that sugar, cocoa, tobacco, hibiscus fibre, and so on can be grown in substantial quantities. A conservative estimate is that some 85,000 tons a year will be using the railhead at Mikumi by 1966. That station will be served to and from the areas to the south by the existing road services, until such time as it is considered economically sound to continue with the projected north-south railway along the agreed alignment on which the branch to Mikumi will run. The line, therefore, is the first stage in development of railway communication with the Kilombero Valley and the Southern Highlands Province.

L.T.E. Redundancy Compensation

IN our Staff and Labour Matters column last week we reported that a surplus of some 600 maintenance staff had arisen in London Transport garages, and that as a result of an agreement freely negotiated with the representatives of the men, redundancy payments were to be made on a scale which was set out. The age distribution of the maintenance staffs in the garages has become out of balance because there has been no recruitment for some years, because of the smaller number of buses to be maintained, as well as technical improvements in the vehicles and in maintenance methods. The age distribution of the staff is important because many of the men are required to drive as well as maintain and service buses. With increasing age the men are not able to undertake the driving of buses, which creates difficulties in the discharge of garage work. The retirement of the older men brings nearer the time when, through normal wastage, it will be possible to recruit younger staff. Because of protection given to men formerly in the employ of certain Local Authority tramway undertakings under the London Passenger Transport Act of 1933, some hundreds of men in the garages have no fixed retiring age and can be retired only by agreement. Similarly, a proportion of the men made redundant through replacement of trams and trolleybuses by buses are also protected by statute or statutory undertaking. These men also are in the older age groups and can be retired only by agreement.

An Even More Comprehensive "Directory"

THOSE who are concerned, in almost every country in the world, in managing, building or supplying railways, will welcome important new features of the 1958-59 edition, the 64th, of the "Directory of Railway Officials

& Year Book," the subject of brief notice on page 301. A new section gives details of locomotive and rolling-stock suppliers, listed by countries and also under principal classes of product; the latter include diesel-hydraulic, gas turbine and gas generator locomotives; and electric multiple-unit rolling-stock. Developments on British Railways, including the new traffic organisations in some Regions, and progress on the modernisation plan, are reflected in revision of the several entries and in the new map showing Regional boundaries. The information on electrified lines has been much amplified, and now affords almost complete world coverage—except for China, where the authorities unfortunately have not seen their way to providing information on this or any other aspect of their fast-developing railway system. The basic arrangement of information has been retained as the most practical, and familiar and acceptable to readers. With its enlargements the 1958-59 edition is a corpus of information unapproached, we believe, in accuracy and comprehensiveness.

Overseas Railway Traffics

EAST African Railways & Harbours approximate railway revenue for the month of July, 1958, was £1,578,000 compared with £1,428,000 in July, 1957, an increase of £150,000. Railway revenue for the first seven months of the year was £10,870,000, representing an increase of £913,000 on the revenue for the same period last year. Increases were recorded in all classes of traffic except other coaching traffic. Salvador Railway Company receipts for June amounted to colones 183,000 compared with colones 205,000 in June last year. Aggregate receipts for the year ended June 30, 1958, amounted to colones 2,699,000 (3,158,000). Costa Rica Railway receipts for July were colones 1,973,548 compared with colones 1,821,649 in July, 1957, an increase of colones 151,899. Net railway earnings of the West of India Portuguese Guaranteed Railway Co. Ltd. for the 10-day period ending August 20, 1958, were Rs. 54,047 compared with Rs. 96,280 in the corresponding period in 1957.

Indian Electrification Plans Altered

THE loan of £38.5 million offered by the United Kingdom to India—if, as is likely, it is accepted—will probably strengthen the determination of the Government of India not to curtail further railway projects in the Second Five-Year Plan, in which they have high priority. Several projects, however, seem to have been postponed, because of lack of funds, to the Third Plan, from which others have been displaced in turn. The situation as to electrification at 25 kV., 50 cycles, is not clear. Conversion of the Southern Railway metre-gauge main line from Tambaram to Villupuram is now, it seems, to stop short at Chingleput, at the end of the Madras suburban area. Whether the electrification of the heavily-trafficked broad-gauge main line westwards from Madras to Arkonam is additional to, or instead of, the Chingleput project, is not stated. None of these is nearly as important as the electrification in the industrial areas of Bengal and Bihar, which apparently is to proceed as planned. That the South Indian projects found places in plans is probably due to the pre-existence of detailed projects which could be put forward at an opportune moment.

Australian-Built Railcars in Malaya

THE six 500-h.p. Budd-type diesel railcars now in course of delivery to the Malayan Railway, represent the fourth diesel traction type to be delivered to the system in recent years. Previously the Railway has acquired 20 English Electric 350-h.p. and six North British 300-h.p. diesel shunters, and 20 (to be increased to 26) English Electric 1,500-h.p. diesel-electric main-line locomotives. That the diesel is now well established as the future form of traction for the system is further underlined by the fact that no steam locomotives have been purchased by the railway since the war. Besides the obvious improvements to suburban, branch line and inter-urban timings which these railcars will effect, the stainless steel con-

struction of these vehicles, on the principles followed by the Budd Company of U.S.A., should lead to operating economies resulting particularly from the saving in weight of some 4 tons for each coach, compared with similar units in carbon steel; and also because the non-corrosive characteristics of the metal obviate the need for protective painting. The railcars are described elsewhere in this issue. This is the first order for stainless steel rolling-stock to be exported from Australia, and was gained, against strong competition, in what has for long been regarded as a traditionally British market area.

The Value of Aerial Photography

THE progress of work in any major railway engineering scheme depends largely on the working procedure adopted, and, with large-scale civil engineering and electrification projects, the accuracy of plans and surveys of the site. Existing drawings may not show enough detail for the job in hand, and where a new plan is required, the use of aerial photography is undoubtedly the best method for its production. In this way precision surveys can be produced relatively quicker and cheaper in most cases than orthodox ground surveys. Aerial photography is not, however, confined to surveying, and its application to other departments of railway operation is described in an article on page 302. Some of the aerial survey companies from their photogrammetry can produce an accurate scale model of a site. In certain instances this may be of more value than photographs, more particularly where there are differences in relative ground heights. These methods often far outweigh the relatively small cost involved. Although not a new development, aerial photography has come to be regarded as a quick and reliable function in many aspects of railway engineering work.

A Century-and-a-Half of Napier

THE reception, held last week at the Savoy Hotel, London, marks the culmination of the activities of D. Napier & Son Ltd. to mark the 150th anniversary of the formation of the company. The company was founded in 1808 by David Napier, a Scot from Inverary, who was a prolific inventor and competent engineer, and who had acquired his love of accuracy and craftsmanship from Henry Maudsley, one of the great engineers of his age. The Napier engineering talent passed on to son and grandson, the latter, Montague Stanley Napier, enhancing the company's fame with his motorcars, and later his aero-engines. Although the firm became part of the English Electric Group in 1942, it has remained an autonomous company with its own board of directors, who have never departed from their traditional workmanship. In the course of its history a wide variety of engineering products has been manufactured; besides the motorcars and aero-engines mentioned, these have included, printing and minting machines, cranes for arsenals and wharves and overhead cranes for railway workshops. Nowadays, among current Napier products, diesel engines of the "Deltic" design, and exhaust-gas turbo-chargers find application to diesel locomotives. Two of the first-named are incorporated in the prototype English Electric 3,300-h.p. "Deltic" Co-Co locomotive, the most powerful single-unit diesel in the world, the performance of which suggests that the high standards set by David Napier are still being maintained.

Informing the Public

NOTHING appears to annoy the travelling public more than the absence of current information in the event of a dislocation to an advertised service. It is the responsibility of the station staff to inform railway travellers in detail of any unexpected delays, but in many cases, in bad weather for instance, the telecommunication system is under full pressure and details of the delay cannot be relayed as quickly as would be desired. This problem which faces all the intensively used suburban services in London, has been remedied on the London-Tilbury & Southend Line, Eastern Region, British Railways, by the installation of a uni-directional teleprinter

network linking the re-equipped train control office at Fenchurch Street direct to the platform and booking office staff at most stations on the L.T. & S. Line. The installation is described elsewhere in this issue. The equipment enables messages to be transmitted simultaneously to all stations connected to the network for immediate display to the public. Although teleprinters are widely employed on British Railways for a variety of jobs, this is the first installation for the purpose of transmitting train service information.

Railbuses for British Railways

ALL of the five makes of diesel railbuses ordered by the British Transport Commission in 1957 for experimental service on British Railways are now running. The last design to appear is that built by D. Wickham & Co. Ltd. of Ware, and is the subject of a technical description on another page. In all, 22 of this form of vehicle are being built for trial in four Regions—Eastern (5), London Midland (4), Scottish (9), and Western (4)—in an endeavour to maintain and create passenger traffic over branch and secondary lines. These vehicles should enable branch line services to be made more flexible and convenient and it is of interest that some of the vehicles, particularly those for the Scottish Region, are being fitted with power-operated steps to allow access from rail level; this will enable the vehicle to stop at any convenient point, for example, at road crossings, even where no normal platform exists. The Wickham vehicle, as was expected in the product of a firm experienced with diesel railcar design and construction, incorporates features already proved in service, including the builders' tubular system of body and underframe construction and radius-arm-controlled axleboxes.

Emergency Arrangements Criticised

IT is very seldom that an Inspecting Officer finds it necessary to comment adversely on the steps taken after an accident to summon help and make the best arrangements for dealing with the difficulties in such an emergency. Generally the situation is precisely the reverse. Colonel D. McMullen, however, was obliged to take this course in his report, summarised in this issue, on the collision at Milngavie Junction, on December 7, 1957. This was caused by the driver of a light engine, an experienced man with a clear record, failing to observe distant and outer home signals and meeting a passenger train crossing the junction. It was fortunate that the resultant casualties were not particularly serious; but although this was not known for some time, no doctor was sent for and the stationmaster, living nearby, was not summoned for half-an-hour, by which time he had been told of the accident by members of the public. He did not then act promptly for the best, and 1½ hr. elapsed before a bus arrived to take uninjured passengers forward.

A Railway for Sale

FOR more than 40 years, the Ravenglass & Eskdale Railway has been well known as a 15-in. gauge line serving one of the most charming districts in West Cumberland. Last week it was advertised by the Keswick Granite Co. Ltd. as for sale by private treaty as a going concern, for the inclusive price of £22,500 freehold. Included in the offer are the 7½ miles of track, two steam and three diesel locomotives, rolling stock, station buildings, 11 houses, a café and shop, three fields, etc. This railway in its present narrow-gauge form would appear to have points of similarity with those of a railway in a fair ground. There is no Ministry of Transport inspection, and no annual returns are made. In origin, however, it was a Statutory railway of 2-ft. 9-in. gauge, authorised by Act of May 26, 1873, primarily to serve iron mines at Boot, seven miles up the valley from Ravenglass. The line was opened for mineral traffic in April, 1875, and for passengers on November 20, 1876. The iron mines failed, and the railway then relied mainly on tourists. All traffic ceased on November 30, 1908, and attempts to revive

the line during the next five years failed, although it was transferred to a new statutory company—the Eskdale Railway—in 1909. Under new ownership, the track was reconstructed to a gauge of 15 in. and opened in sections between 1915 and 1917.

Irish Changes

THE many people who have watched the progress made in the past few years by Coras Iompair Eireann and noted the way in which that undertaking, in the face of adverse financial circumstances, has succeeded in providing the greater part of the Republic of Ireland with efficient and up-to-date railway and road transport, will recall with appreciation the services rendered by Mr. T. C. Courtney, who resigned from the chairmanship last week.

The division of the Great Northern Railway between C.I.E. and the Ulster Transport Authority is the occasion of changes in the C.I.E. board. As the G.N.R. lines south of the Border are—in effect—part of the Dublin-Belfast main line and a few miles of branch line—are being taken over by C.I.E., a good many complex questions and details must be settled, relating to G.N.R. assets and staff, and the method of working the main line to Belfast in conjunction with U.T.A. The extra railway traffic to be handled by U.T.A. will also be considerable in relation to the present total. These factors, and the desirability of having on the C.I.E. Board men with experience of G.N.R. affairs, have resulted in the appointments announced in our personal columns in last week's and in the current issue.

The new Chairman is Dr. C. S. Andrews, Managing Director of Bord na Mona (Turf Board). With not a little experience of piloting a Government organisation through stormy financial seas, and with his knowledge of the tourist business derived from his former position as Accountant to the Irish Tourist Board, Dr. Andrews has come to C.I.E. well equipped to undertake a formidable task. The knowledge and skill of Mr. Courtney, who asked to be permitted to resign his post as Chairman, will remain at the disposal of the Board, of which he is now a part-time Member. Two Members of the G.N.R. board, Mr. William McMullen, a trades unionist, and Mr. F. Molony, a Director of Martin Molony & Sons (Ireland) Ltd., are now members of the C.I.E. Board, and will remain so when a G.N.R. Board ceases to exist on October 1.

The new C.I.E. Board will include three present members, Mr. F. L. Ferris, who represents agricultural interests, Mr. T. P. Hogan, a Director of Plessey (Ireland) Limited, and Mr. J. T. O. Farrell, also a trades union leader. The board as now constituted resembles an Area Board of the British Transport Commission and, indeed, performs similar functions. Not the least of these is the problem of co-ordinating rail and road traffic.

Since Mr. Courtney was appointed Chairman of C.I.E. in 1949, its railway undertaking has been modernised throughout. There has been the changeover from steam to diesel traction, with introduction of the diesel locomotives and multiple-unit trains and of the fast passenger services recorded in our pages from time to time. The C.I.E. main-line diesel services linking the capital with the chief provincial centres give a passenger service unrivalled in any other country, in relation to the sparseness of population and paucity of large population centres. There are, moreover, some excellent diesel passenger services on secondary lines. The advent of diesel traction has been accompanied by a remarkable organisation for maintenance and repair of diesels. What has been done was ably related by Mr. Courtney himself in his paper to the Institute of Transport Congress in Dublin, summarised in our June 6 issue.

Vigorous efforts have been made to capture goods traffic, and diesel haulage, much else has been done on the mechanical department under the supervision of Mr. O. V. S. Bulleid, who retired recently from his position as Chief Mechanical Engineer. This has included an experimental turf-burning locomotive, rationalised wagon production, use of laminated wood in passenger coach construction, and a high standard of main-line rolling stock design and maintenance.

There has also been activity in other spheres. A great

deal has been done to win and retain passenger and goods traffic, in the face of difficulties such as short distances. On the passenger side, there has been co-operation with the tourist industry, and much enterprise has been shown in the matter of reduced fares and excursions. C.I.E. advertising is of a high standard. With goods traffic, where the railways have the problem of working branches which, though not economic, are not closed, for reasons of public policy, the services offered have now much improved. The West Clare and other narrow-gauge sections are operated with efficiency.

In view of the circumstances, the C.I.E. main-line track is well maintained. As far as the financial situation allows, there have been improvements to stations and structures, including the new works at Dun Loaghaire. The standard of signalling—and, indeed, the safety record of C.I.E.—is good. In other spheres, there has been activity in efforts to reduce expenditure on costly equipment, exemplified in a neat design of simplified level crossing gate.

All this has been achieved largely because of the leadership of Mr. Courtney, aided by his fellow board members and officers, headed by the General Manager, Mr. Frank Lemass. The task of Coras Iompair Eireann was already formidable before absorption of part of the G.N.R. The enlarged undertaking will work under the terms of the Transport Act and under the terms of the Great Northern Railway Act. It will have a capital of about £14,000,000 and will have a period of five years in which to arrive at an economic working. During this period it will be helped to the extent of £1,000,000 a year to cover any losses, but these grants will cease in 1963. Under the Act, C.I.E. will be free to accept or reject traffic and will not have the usual obligations of a common carrier. It is expected that it will close down uneconomic branch lines and cut out uneconomic traffic. Some staff redundancy is probably inevitable, and provision for compensation to redundant workers is made in the Transport Act.

"Out of Category" Staff Pay

IT was known that when agreement had been reached between the British Transport Commission and the railway trade unions for an increase in the rates of pay of conciliation grades, the Transport Salaried Staffs' Association and the British Transport Officers' Guild would approach the British Transport Commission for a similar improvement in the salary ranges of "out of category" staff. The members of the staff covered by this term are those who are above the special class categories and are in receipt of salaries from £1,015 to £2,230 a year. The claim which was made was that their remuneration should be increased by 3 per cent as from June 30, 1958, and under the agreed machinery of negotiation for this staff, the claim came before Sir John Forster, Chairman of the Railway Staff Tribunal, who gave his award of September 1. This was to the effect that the offer which the Commission had made of a flat rate increase of £30 a year in the salaries of the "out of category" staff was reasonable, having regard to the circumstances and to the fact that it was accompanied by an offer to review the salary structure of the staff covered by the claims as soon as this could be undertaken.

There are various considerations which should be borne in mind in considering this flat rate increase of £30 a year to this section of the staff. Obviously, in cash values it is not as good as the 3 per cent which was obtained by the railway unions. On the other hand, the pay of the conciliation grades is necessarily lower and the highest increase which was given to the classified salary grades as a result of the 3 per cent settlement was not more than £29. Therefore, it can be argued that the present increase awarded to "out of category" staff, at least would maintain existing differentials. Moreover, it is an award which has been made by an independent and experienced chairman of a tribunal which has a good deal of knowledge of matters of this kind, and it cannot be gainsaid that conditions between the two sections of the staff are substantially different. In the case of the conciliation grades

it was accepted by the Tribunal, and later also by the Commission, that the basic rates of pay of some of the grades were low in comparison with those in other nationalised industries and some public undertakings. Readjustments which have been made in the status of many railwaymen, perhaps especially those in the "out of category" class, in recent times have done much to improve the lot of these men. In particular the expansion of the traffic organisation and the sympathetic review of intermediate salaries by the Commission has had the effect of bringing into higher categories a considerable number of railwaymen. It is probably true to say, therefore, that there can be very few cases where the pay of this section of the staff is out of line with the general levels obtaining outside the railway service. In some cases the up-grading which has occurred has to be borne in mind when considering the actual amount of the increase now awarded.

There is a further point that the British Transport Commission, in common with all employers at the present time, must have due regard to economy in the matter of salary increases. Equally, it must, as a good employer, keep its rates of remuneration in line with outside organisations if it is to retain both the services and the loyalty of its employees. We believe that a very great deal has been done by the Commission in this direction, certainly so far as the lower and medium grade railwaymen is concerned. We have frequently expressed the view that more could be done to reward the railway officer and there is no doubt that this is still the case, but it is now in the highest grades of railway administration that the disparity between the value for the work done and the remuneration received is most marked.

Modernisation Progress in the L.M. Region

CONVERSION by stages to diesel operation of main lines of the former Midland Railway—what until the setting up of the present traffic organisation of the London Midland Region of British Railways was called the Midland Division of that Region—has been known for some time to be part of L.M.R. modernisation plans. An important feature of these is the operation of high-speed, luxuriously appointed, first class only, diesel Pullman multiple-unit trains built by the Metropolitan Cammell Carriage & Wagon Co. Ltd. between St. Pancras and Manchester Central via Derby—something in the nature of the "Trans-Europe Expresses," but, by all accounts, even more comfortable, and likewise commanding supplementary fares; this seems a sound commercial proposition, with good chances of creating and maintaining lucrative business traffic in the face of air and road competition. Last week Mr. David Blee, General Manager of the Region, said it was hoped that these trains would start running in the autumn of next year, covering the 190 miles, which include severe grades and sharp curves in the Peak district, in a little over 3 hr.; apparently the curves make a 3-hr. schedule impossible.

A further development on the former M.R. system is the operation by multiple-unit diesel trains, second class only, of the St. Pancras—Luton—Bedford suburban services and of the former Tottenham & Hampstead Junction line between Kentish Town and Barking. Introduction of the full service is scheduled for the end of 1959. It will be one of the largest multiple-unit diesel schemes introduced in Britain. An improved service is to be given in the peak periods; in off-peaks, there will be hourly services between St. Pancras and Bedford, calling at all stations beyond Elstree; also an hourly service between St. Pancras and Luton, calling at all stations. The service between Kentish Town and Barking will be hourly throughout the day and in substitution of the existing steam services; this line, although it is to some extent peripheral, conveys many people to and from work in factories and elsewhere, and performs a useful function in the absence of parallel road transport which could move such numbers at the times required.

To work these services, 120 multiple-unit coaches will be needed, made up into four-car trains with a seating capacity of 370. They will be made up into eight-car

trains during rush hours. They are being built at Derby and will start to come off the production line next April. Each four-car set will consist of two motor cars and two trailer cars, each motor car being powered by two 238-h.p. Rolls-Royce engines. The stock will consist of open and semi-open vehicles, and each four-coach train will include one vehicle with lavatories. There will be no end views forward and back for passengers, as in some other diesel trains. There will be transistor type fluorescent lighting and high-back seats for greater comfort. Special diesel maintenance facilities are to be provided at Cricklewood. It will also be necessary to equip Kentish Town depot to deal with the main-line diesel locomotives which eventually will work passenger and goods trains between London and the Midlands.

Although the former Midland Railway, before grouping in 1923, operated its London-Bedford suburban services with some exceedingly comfortable non-corridor stock, these steam services were by present standards slow and relatively infrequent. The diesel train timetable now planned is revolutionary. The main line to Bedford serves not only outer London suburbs and dormitory areas but the manufacturing centre of Luton. It will be necessary to convert the present pair of goods tracks (used by some passenger trains) between Harpenden and Bedford to full passenger train standards, with improved signalling and additional platform faces at certain stations. It is also intended to run diesel-hauled trains into Moorgate for morning and evening services.

Progress with electrification at 50 cycles of the former London & North Western main line between Euston and Manchester London Road and Liverpool Lime Street also was described by Mr. Blee. Work on conversion between Manchester and Crewe is well forward. The new colour-light signalling system between Wilmslow and Slade Lane Junction, brought into operation on July 16 and described briefly in our August 1 issue, is working satisfactorily. The overhead line is to be energised at 25 kV. this month so that the static equipment can be tested; arrangements are being made for the training of drivers and motormen to begin in October; and trials with an electric locomotive will take place before the end of the year. Before the end of 1960 electric services will be in operation running between Manchester and Crewe, and by 1963 between Birmingham, Liverpool, and Manchester. The complexities resulting from restricted clearances, including reduction of voltage to 6,600 through tunnels and under bridges, and the rebuilding of bridges, have been mentioned in this journal from time to time. An article describing the procedure for preparing for and installing overhead equipment appeared in our issue of September 27 and October 4, 1957. How far major works will be necessary to afford clearances in tunnels is still problematical. Some of the tunnels on the old London & Birmingham Railway are understood to be of large enough bore to facilitate installation of 6.6 kV. equipment without undue difficulty; lowering the tunnel floor, and laying a concrete bed as has been done in France, make impossible a properly resilient road-bed.

Of more immediate consequence to travellers are the timetable alterations which take effect from September 15. We propose to deal with these in detail when reviewing the London Midland Region winter passenger services. In brief, to allow for delays caused by track work in progress, and to maintain connections, expresses will leave earlier or arrive later. The Regional management has rightly taken steps to inform the public, and to take it into its confidence, by issuing a leaflet giving revised timings, with a well-phrased preface explaining the reasons. Trains leaving Euston earlier include the "Royal Scot" and the afternoon "Caledonian," also the 7.55 a.m. to Liverpool and Manchester; this last will start at 7.45, the departure time of the present morning "Caledonian" which with its southbound counterpart at 4 p.m. from Glasgow Central is to be suspended at the end of its experimental summer period—a reasonable measure in any case during the winter, with its long periods of darkness not conducive to day travel at these hours.

Scottish Region Winter Train Services

CONSIDERABLE changes are to take place in the Anglo-Scottish services from September 15. On the East Coast Route the 7.50 a.m. from Kings Cross, with its name changed from "Fair Maid" to "Morning Talisman," will call additionally at Berwick and, instead of continuing to Perth, will terminate at Edinburgh at 2.42 p.m., six min. later than now. The "Heart of Midlothian" (1 p.m. from Kings Cross), making additional stops south of the Border, will be due in Edinburgh 16 min. later than last winter, and also will terminate there. Similarly the up "Fair Maid," now the "Morning Talisman" (8.30 a.m. from Edinburgh), will start from Edinburgh and call additionally at Berwick, reaching London five min. later, at 3.25 p.m.; the up "Heart of Midlothian" also will start from Edinburgh at 1.30 p.m. instead of from Perth.

At night the 7.30 p.m. from Kings Cross (previously 7.45) will take over the name of "Aberdonian" from the 10.15 p.m. down; the former will reach Aberdeen at 7.28 a.m. as last winter, so being slowed 15 min. in running, and the latter at 9.31 a.m., 11 min. later. Most of the night trains will be slowed by an average of 10 min. from London to Edinburgh, and will have five min. later arrivals at Kings Cross in the up direction. The "Flying Scotsman" will be only four min. slower northbound and two min. slower southbound than last winter, but the 15 min. later departure from Edinburgh of the northbound Aberdeen connection, with the additional stops introduced when curtailments of service took place last summer, makes the Aberdeen arrival (9.11 p.m.) 24 min. later than that of last winter. The "North Briton" (9.15 a.m. from Leeds to Edinburgh and Glasgow) will call additionally at Dunbar.

On the West Coast Route the down morning "Caledonian" from Euston to Glasgow and the return working at 4 p.m. are both to be withdrawn. Also the decelerations of all the principal trains will be considerably greater than those of the East Coast. All down expresses will leave Euston 10 min. earlier, even to the extent of altering the time-honoured 10 a.m. departure of the "Royal Scot" to 9.50 a.m., and the arrivals of day trains in Glasgow will be five min. later, except the down "Midday Scot," which will not arrive until 9.24 p.m., 14 min. later—a total deceleration of 24 min. with no additional stops. The "Caledonian," leaving London at 4.5 instead of 4.15 p.m., will reach Glasgow at 11 p.m., the overall time now being 25 min. longer than that of the pre-war "Coronation Scot." In the southbound direction the 10 a.m. "Royal Scot" and 1.30 p.m. "Midday Scot" will both be 15 min. later into Euston, at 5.30 p.m. and 9.15 p.m. respectively.

A change of note is that the existing 9.10 p.m. all-sleeping-car train from Euston to Glasgow will start at 10 p.m., and will arrive in Glasgow at the more convenient hour of 6.45 instead of 6 a.m.; the 9.25 p.m. down will start 20 min. earlier, but will not reach Glasgow till 7.28 a.m., eight min. later than before. The 10.50 p.m. sleeping car train from Euston to Perth will start 15 min. earlier, but its Scottish times will remain unaltered. In the reverse direction the 5.40 p.m. from Glasgow to London, with through coach for Penzance, is to start at 6.50 p.m., but by 21 min. acceleration to Carlisle, and 35 min. south of that point, will reach Euston at 5.19 a.m., 14 min. later. There will be no alteration in the running times of the other up night expresses. The alteration made last summer in the starting times of the morning express from Manchester (8.40 a.m.) and Liverpool (8.57 a.m.) to Glasgow, to keep them clear of the down morning "Caledonian," are to be permanent, with an arrival in Glasgow at 2.15 p.m., 25 min. slower from Manchester and five min. quicker from Liverpool.

Diesel multiple-unit trains have taken over some or all of the workings on many routes; all, for example, between Edinburgh and Glasgow via Midcalder and Holytown and a number of the stopping train workings between Edinburgh and Dundee, but as yet without any curtailment of the previous steam train times. A welcome exception, however, is the main Edinburgh-Glasgow line via Polmont,

over which four diesel trains will now make the journey in 55-57 min., 18 in 60 min., four in 62-63 min., and 10 in 65-68 min., almost all with buffet facilities, providing, with six steam workings in 55-62 min., a service over this important route far superior to anything that has operated in earlier years. Further north, the service between Glen-eagles, Crieff and Comrie is being increased and accelerated with diesel railbuses.

The suspension, except on Saturdays, of the 12.15 p.m. from Glasgow to Aberdeen and the 11.30 a.m. from Aberdeen to Glasgow—one of the recent economy

measures—becomes permanent. The 6.10 p.m. "Granite City" from Aberdeen to Glasgow is to start at 6.5 p.m. and call additionally at Stonehaven. The 7.48 and 8.5 a.m. from Aberdeen to Inverness, via the direct and the coast routes respectively, are to be consolidated as one train as far as Cairnie Junction, except on Saturdays. The buffet car on the 8.20 a.m. from Inverness to Perth will continue with the Edinburgh portion to that city, and will return on the 4 p.m. from Edinburgh, instead of on the 4.5 p.m. from Glasgow as previously, though through Glasgow passengers will have the use of the car from Perth.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of Correspondents)

Smoking in Trains

August 27

SIR,—I have just returned from an extensive journey over some Continental railways, mostly in non-smoking compartments. I saw nobody smoking in one, except once, in a German railbus, when a man was about to light a cigarette, but the guard immediately pointed out to him that it was a *Nichtraucher*, and that he must move to the trailer if he wished to smoke.

Since my return to Britain I have already four times seen passengers smoking in non-smoking compartments. Indeed, this may be witnessed almost any day at big stations even before the trains have left. Not once since the war have I seen a railway official rebuke such people, unless directly requested to do so by a passenger.

British Railways make great use of the slogan "Travel in Rail Comfort." To a non-smoker, comfort means freedom from smoke and also, equally important, *freedom from disputes on the subject of smoking*. It would also be reasonable to expect British Railways to devise some kind of notice that cannot be defaced or removed. The German Federal Railway no doubt could instruct them on this. A few weeks ago I saw a train of six non-corridor coaches in which only two completely intact "No Smoking" notices were to be found in second class compartments. The few others which survived were all mutilated and in most cases quite illegible.

Yours faithfully,

NORMAN N. FORBES

39, Oakdale Road, Liverpool, 22

Peripheral Passenger Services

August 30

SIR,—There is a considerable daily passenger movement in Greater London which is not to and from the central area. Most of the season ticket traffic from Watford, Bushey, and Hatch End uses steam trains to and from Euston, but the electric lines (L.T.E. Bakerloo and London Midland Region) are well patronised by workers travelling to and from Watford and Harrow. Another roundabout but much-used service is that between Broad Street and Richmond.

One reason why the Ealing-Greenford service survives is not because it is a logical continuation of the L.T.E. Line, but because it connects with Western Region trains to and from Paddington. Both the Central and District Line routes from Ealing Broadway to Central London are circuitous; and, if there is a convenient train, it is quicker to go via Paddington.

A much-needed service, avoiding tedious journeys to the central area, is Willesden Junction to Clapham Junction over the West London Railway, at least in the peak periods and in connection with exhibitions at Olympia, football at Chelsea, and excursions to the South Coast. The Wimbledon to West Croydon line is operated with travelling conductors who issue tickets and collect them at the halts. The same procedure could be used on the West London. The East London Railway could

be developed as the nucleus of a new route from New Cross and New Cross Gate and beyond to the City.

There is a good case for railbuses not only in the countryside but in the London and other built-up areas. One has been running for years between South Acton and Acton Town.

Yours faithfully,

R. G. R. CALVERT

45, Woodwaye, Oxhey, Herts

[As regards the Acton to South Acton service, our correspondent is referring presumably to the District Line service worked by a single motor coach.—Ed.,—R.G.]

Loan for Sudan Railway Development

September 1

SIR,—I wish to refer to your editorial note about the loan for the Sudan Railways development published in your issue of July 25. I am afraid there is no provision nor intention at the present moment to go with the new western extension any further than Nyala which is about 400 kilometres east of the Sudan border. As far as we know, only very primary and unofficial discussions were made in 1957 about the railway link and the matter has not been seriously considered since.

The approved loan will be expended on a two-year programme for increasing the capacity of the railways in track, rolling stock, equipment and harbour extensions. One major item is the introduction of diesel-electric locomotives as a start to complete change-over of the present steam traction.

Yours faithfully,

M. EL FADL
General Manager

Sudan Railways, Atbara, Sudan.

L.M.R. Diesel Suburban Services

September 4

SIR,—Diesel sets are to replace steam on the suburban services of the former Midland Railway line from St. Pancras to Bedford by the end of 1959.

This is pleasing news and shows a further step forward in implementation of the modernisation plan, but one cannot escape a feeling of amazement that the new sets are to afford second class accommodation only. Although most of the present steam suburban trains have no first class accommodation, one of the desirable sidelines of the modernisation plan is an all-round improvement in facilities offered to the public. Bearing in mind the type of area served—St. Albans, Harpenden, Luton and Bedford (the last named being almost 50 miles from London)—is it too much to ask that British Railways will hastily revise their plans and ensure that the passengers on their Midland line will be no worse off when their improvements arrive than those on the Eastern Region, whose trains on the 41-mile Liverpool Street to Southend line contain first class accommodation?

Yours faithfully,

F. GLADWIN

THE SCRAP HEAP

The Conqueror's Mistake

"Why did they build it so near the railway?"—Inquiry of an American visitor to Windsor Castle.—"Peterborough" in *The Daily Telegraph*.

C.N.R. or a Buyer

The Canadian National Railways is the largest corporate buyer and shopper in Canada, spending more than \$500 every minute of the year. Some 300,000 different items are bought, including bed-linen, caviar, and silk stockings, the last presumably for female hotel staff and train hostesses.

Jubilee of the "Southern Belle"

A new Pullman "train de luxe" which, it is claimed, will be the most luxuriously fitted in the world, will shortly begin to make daily journeys between London and Brighton. It will consist of seven coaches with vestibules throughout. There will be four drawing-rooms, one buffet, and two composite cars for smokers.—From *The Evening News* of August 29, 1908.

[This was the famous "Southern Belle," of the London Brighton & South Coast Railway, which went into service on November 1, 1908; it was re-named "Brighton Belle" on June 29, 1934. Since January 1, 1933, it has been a multiple-unit electric train. The original drawing room (alias parlour) cars were the *Bessborough*, *Cleopatra*, *Belgravia*, and *Princess Helen*; the buffet car the *Grosvenor*; and the composite cars the *Alberta* and *Verona*. The train was described in *The Railway Gazette* of October 9, 1908, and illustrated in the issue of November 6.—Ed., R.G.]

Diesel Displaces Steam at Bow

All the steam locomotives previously allocated to the Devons Road Motive Power Depot of the London Midland Region in Bow, East London, were replaced recently by diesel traction units. The final changeover, as

recorded on page 288 of last week's issue, makes the depot the first in the London Midland Region to go over entirely from steam to diesel traction. The accompanying illustration shows 0-6-0 class "3F" steam locomotive No. 47517, the last remaining steam locomotive allocated to the depot, passing North British 330-h.p. shunting and English Electric 1,000-h.p., Type "1," mixed-traffic diesel locomotives, two of the three types to be based on the shed.

Austerity Air Travel

One line of advance for British air lines will perhaps be "to adopt standards more appropriate to mass travel, and cut out the cossetting that too many air passengers seem to expect as a right," according to Mr. Harold Watkinson, Minister of Transport & Civil Aviation, in his speech at a dinner given by the Society of British Aircraft Constructors in London recently.

Killing the Iron Horse?

The railroads pay about \$5.3 billion annually in wages; they spend some \$1.9 billion annually for fuel, materials and supplies in their operations; they spend an average of \$1.25 billion for additions and improvements to their properties.

In addition they pay the Federal State, and local governments upwards of \$1.1 billion a year in taxes. Then, on top of that, they collect several hundred millions more from their customers through the freight and passenger fare excise taxes and turn this over to the Federal government—and in effect, they are unpaid tax collectors. (Incidentally, these excise taxes were passed as a World War II emergency measure, and it was said then that they would be repealed when the war was over. But they're still on the books.)

All these statistics add up to the fact that the Iron Horse is still a most faithful and indefatigable servant, both in its complete transportation service and its part in the national economy . . .

Congress needs to take an objective look at the unfair taxes imposed upon the railroads, and make sure that the railroad industry does not go by the board. A look at the profit-and-loss statements discloses how urgently the industry needs relief from unrealistic—and unprofitable—governmental regulations.—From the *"Salt Lake City (Utah) Deseret News."*

(The Senate voted in June to repeal the freight transport tax; see page 150 of our August 8 issue—Ed., R.G.)

Plus ça change . . .

(Southern Region traffic organisation: see our August 15 issue)

Whatever views one holds on automation, There's something comforting about rotation, Even if some allege, with trepidation, The *status quo* to be our destination. So much depends upon the way we go And on the nature of the *status quo*.

At any rate, when reading of the change
In railway departmental scope and range,
A thought came dancing in through memory's door:
"Surely we must have passed this way before?"
Turning from life's not always trivial round,
We tread, with much relief, familiar ground.

The world keeps spinning down the grooves of change
Like railway wheels—the simile is strange,
For railway wheels have got somewhere to go,
But where the world is heading we don't know.
Shall we get back to first things at the end,
Or do we keep on going round the bend?

A. B.



L.M. Region class "3F" 0-6-0T steam locomotive passing North British shunting (centre) and English Electric mixed-traffic diesel locomotives on its last trip from Devons Road Motive Power Depot

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

"Ha" Tribal Locomotive Named

Chieftainess Mwami Theresa Ntare, of Buha in the Kasulu District of the Western Province of Tanganyika, recently named one of the 103 "Tribal" class locomotives of the East African Railways & Harbours after the name of her tribe—"Ha." This was the first locomotive naming ceremony at which a lady has officiated in East Africa. The locomotive, a 2-8-4 of the "30" class, was built by the North British Locomotive Co. Ltd. The ceremony, which took place at Kigoma, on the east shores of Lake Tanganyika, was attended by the District Commissioners of Kasulu and Kigoma, and tribal elders from these Districts and Kibondo District. Mr. C. W. Leverett, Regional Representative of the Railways & Harbours in Tanganyika, officiated on behalf of Mr. J. R. Farquharson, General Manager, E.A. R. & H.

VICTORIA

Improved Railcar Service

Track improvements, including the installation of long welded rails have made possible a substantial speed-up of the diesel railcar service on the Korong Vale-Robinvale line. The early morning train leaves Robinvale for Melbourne on Tuesdays, Thursdays, and Saturdays at 4.50 a.m.—30 min. later than before—arrives at

Korong Vale at the usual time, and connects at Bendigo with the noon Melbourne train which has a buffet car service.

The railcars, connecting with the 8.20 a.m. Wednesday, and 1.30 p.m. Monday and Friday trains from Melbourne, have also been accelerated by 25 and 30 min., respectively, and arrive at Robinvale at 6.55 p.m. and 11.45 p.m., respectively.

Reduced Mid-Week Fares

Reduced rail fares for country return journeys between Tuesdays and Thursdays are being given a further trial by the Government Railways. Sir Arthur Warner, the Minister of Transport, has stated that if more patronage is not forthcoming, serious consideration would be given to the withdrawal of the concession. The fare for the concession tickets is calculated on the basis of single fare, plus 20 per cent compared with the ordinary month return of single fare, plus 50 per cent.

NEW ZEALAND

Car Park at Wellington Station

Parking for 600 motor-cars is planned at the Wellington Railway Station under a proposal sponsored by the Minister of Railways, Mr. M. Moohan. The proposal is that a building of three floors, each 300 ft. x 200 ft., be constructed above the station platforms, which at present are covered

only by continuing verandahs. The new floors are to be supported by stilts and each will accommodate 200 vehicles.

Mr. Moohan has stated that it is intended to negotiate a lease in perpetuity with the Wellington City Corporation, owners of the land on which the station stands. He has pointed out that now that steam has been eliminated from the Wellington yard, it is practicable to build above the platforms, so that trains and passengers can move below the car park. The car park will be some 16 ft. above rail level, to give clearance for the electric overhead equipment. Leasing of this at present unused space over the station platforms would bring in much-needed revenue.

CANADA

Faster Freight Schedules

Substantial improvements in express freight train schedules from Montreal and Toronto to Western Canada have been announced by Canadian National Railways. The new schedules mean that wagon-load shipments are delivered one full day earlier at most Western Canadian cities.

A two-month test period has proved the feasibility of the accelerated timing, made possible by improved track, diesel traction and modern operating methods. Actual running time of the C.N.R. daily express freight train from Montreal to

Rhodesia-Built Passenger Stock



Lounge section of twin-unit lounge-dining cars built at Rhodesia Railways Bulawayo workshops



Dining section of twin-unit cars; the stock is used on many mail trains from Bulawayo to the Copperbelt

Vancouver, 2,924 miles, has been cut by 16½ hr., most of which is gained between Montreal and Winnipeg.

Wagon-load freight shipments can now be placed ready for unloading in Winnipeg on the third morning after loading in Montreal, on the fourth morning in Saskatoon, the fifth in Edmonton, and sixth in Vancouver. Similar time savings have been placed in effect on traffic from Toronto to the West.

Although no change has yet been made involving eastward freight train schedules, tests are now being conducted which should lead to comparable improvements.

SWITZERLAND

Self-Drive Cars at Stations

Self-drive motorcars can now be hired at stations in Basle, Berne, Bienne, Geneva, Lucerne, St. Gall, and Zurich. Charges vary between 35 and 40 francs a day according to the type of car required, for 60 miles, or between 26 and 28 francs for half-a-day and 45 miles. The service is restricted to holders of general (all-line) season tickets over the Federal Railways.

UNITED STATES

Locomotive with Free Piston Engine

The Electro-Motive Division of the General Motors Corporation plans to build a locomotive in which power will be developed by a twin-cylinder free

piston engine and turbine, as the outcome of laboratory work which has been carried on for some time with a smaller engine of this type. It will drive a standard traction generator, and the current will be used in traction motors in the same way as in a diesel-electric unit. It is claimed that a locomotive of this type will be able to work with oil fuel of the lowest cost obtainable.

ARGENTINA

Floods on Borges-Delta Line

Towards the end of July, strong south-east winds caused a 14-ft. rise in the waters of the River Plate, resulting in the low-lying riverside towns being flooded. The line was completely submerged at J. Anchorena, and the General Mitre Railway was forced to cancel its electric suburban services between Borges and Delta. Emergency bus services were operated between Borges and Delta for several days before the rail service could be restored.

FRANCE

Anglo-Swiss Traffic via Calais

As a result of the completion of electrification between Lille and Basle, the special trains operated each winter between Calais and the Swiss winter sports resorts will run via Lille and Hirson during the coming winter instead of the former route via Amiens, Laon, and Rheims. The through portions for Berne and beyond which

have previously been detached at Belfort and routed thence via Delle will now run via Basle and Olten, except for a relief train.

HUNGARY

Concrete Sleepers

The State Railways are to use concrete sleepers, so as to reduce the large imports of wood previously needed. The sleepers, produced in Hungary, are of two types: some have a mild-steel inlay and others are of pre-stressed reinforced concrete. A plant for the manufacture of reinforced concrete sleepers for railways in Hungary and for export has been built in Budapest.

BELGIUM

Wagons-Lits Company in 1957

Despite competition from other forms of transport, the number of passengers conveyed in 1957 in sleeping cars of the International Sleeping Car Company (registered in Belgium) for the first time exceeded 2,000,000, an increase of over 4 per cent compared with 1956. The number of fixed-price meals served in trains where the company was responsible for catering was about the same as for the preceding year. There was a marked rise in the sales of refreshments in trains by itinerant vendors. A dividend of 25 Belgian francs a share is to be paid on preference and ordinary shares. The outlook for 1958 is understood to be satisfactory.

Publications Received

Directory of Railway Officials & Year Book, 1958-59. London: Tothill Press Limited, 33, Tothill Street, S.W.1. 8½ in. × 5½ in. 596 pp. Price 40s.—The most important new feature is a section giving details of supplies of locomotives and rolling stock throughout the world. These are grouped first under the countries in which the offices and works are situated, with brief indication of their products; and in a further section suppliers are grouped under the type of product (e.g., electric locomotives, diesel-electric locomotives, diesel-hydraulic locomotives, gas turbine locomotives, railcars, passenger carriages, goods wagons), with the countries also shown. The entries for the British Transport Commission, its Divisions, and the various Regions of British Railways have again been substantially revised, showing the new traffic organisations and the progress of the modernisation plan. Locomotive and rolling stock particulars are more detailed than heretofore, and represent the position at March 23, the latest practicable date for an overall picture. A new map of the Regions of British Railways shows the revised boundaries adopted on February 1. In the statistical section the list of principal electrically-operated railways has been

amplified, particularly in regard to Great Britain, Belgium, Italy, Japan, Poland, and Spain.

The Shape of Things to Come.—Mr. G. F. Huskisson, Traffic Manager, Kings Cross, on the Great Northern Line of British Railways, Eastern Region, has issued an informative, three-page pamphlet which outlines the Great Northern Line plans for the future so far as London suburban passengers are concerned; it was distributed recently to passengers. Attention is drawn to the modernisation work at present proceeding and outlines plans for diesel and eventual electric motive power for all trains in the area. Mention is made of the intention to work diesels over the "Widened Lines" on the Moorgate services "where the start [northbound] from Platform 16 at Kings Cross is a constant difficulty with the steam locomotives now available to work over that route." The ultimate aim, it is explained, is "electrification—to Hertford North and to Hitchin or Letchworth as soon as we can complete the very many heavy engineering works involved in such a plan—a new Kings Cross designed with a better operational layout than at present, and more worthy to be the Great Northern London terminus—fast and efficient

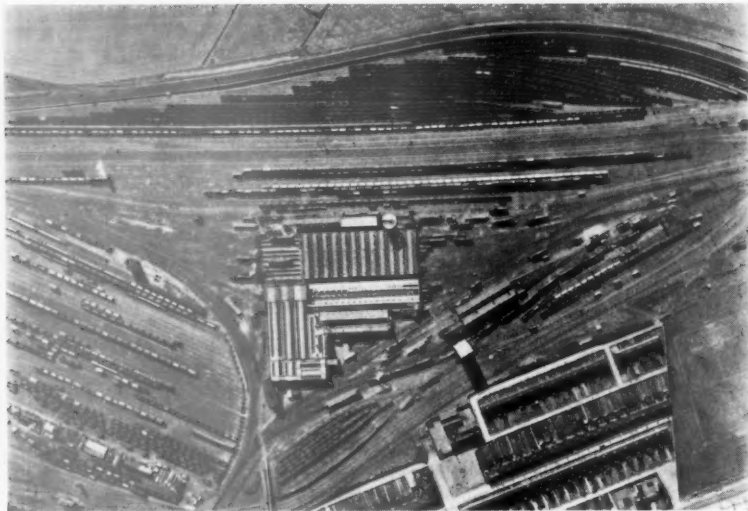
services to Kings Cross and the City not only from the suburbs but from the Hertfordshire countryside and from Lincolnshire, Yorkshire and beyond." The pamphlet is obtainable from Great Northern House, 79-81, Euston Road, London, N.W.1.

Men and Machines. London: Weidenfeld & Nicholson Limited, 7, Cork Street, W.1. 9½ in. × 6 in. 180 pp. Illustrated. 35s.—The history of the company of D. Napier & Son Ltd., which this year celebrates its 150th anniversary, is told in this book. When the firm was founded in 1808 there was already a demand for machine tools and factory equipment which were both accurate and relatively cheap, and the firm soon established itself with its early products. Later the name of Napier was associated with motorcars, later still with aero-engines, each field of activity obtaining fresh distinction for the company. The account is brought up-to-date with present development and production work. As the title suggests this is not only a catalogue of the company's products but an account of the personalities from the founder—David Napier—onwards which have influenced the history of this industrial enterprise. Illustrations are included of many of these personalities and of the famous machines they created.

Aerial Photography in Railway Operation

Production of precision surveys for traffic control and works planning

By H. M. Pearson, B.Sc., A.C.G.I., A.M.I.C.E., F.R.E.S.
Chief Civil Engineer's Department, British Railways, Southern Region



Aerial photograph of the marshalling yard at Peterborough, Eastern Region, British Railways, showing the formation of several freight trains

THERE is no doubt that the greatest single asset of aerial photography lies in the production of first class precision surveys. These can be produced relatively quicker and cheaper in most cases than orthodox ground surveys. The fact that the Ordnance Survey is now making increasing use of this method indicates the extent to which aerial surveying has established its supremacy and reliability. The more difficult the terrain the more economical it is to use this means. If urgency is the criterion then aerial photography can provide a service that is almost beyond challenge.

Aerial photography is not, however, confined to surveying. It lends itself as a modern technique to every department of railway operation. The civil engineer, as a rule, whether in this country or abroad, is already conversant with most of its possibilities, but amongst the other railway departments little advantage has been taken of all the facilities aerial photography has to offer. Much more use could be made of this process if it were better known and there was a wider appreciation of its value.

Traffic Control

Aerial photographs can be used for rapid and accurate spot checks on both freight and traffic congestion. These enable the overall situation at key points such as junctions, provincial stations, and marshalling yards to be assessed at a glance. Such information forms the key to traffic control and is invaluable for advance planning. The photographs can be taken on con-

secutive Saturdays when passenger traffic is densest. This method has already been used in the manner described.

For marshalling yards, photography can be used to give instantaneous wagon counts, as well as indicating the extent to which the various sidings are used. This would be impractical by ground methods. Not only is it possible to take a count by this method, but the photographs are sufficiently accurate, especially in the hands of an

expert, to give an actual wagon type analysis.

The varied scope of aerial photography offers much of advantage to the civil engineers. Its use, however, is by no means confined to this sphere of railway work. It is particularly valuable to the legal fraternity as well as the estate and rating departments. In both these cases strip photography along a railway route gives an accurate record of land usage at any particular time or date. This has proved of considerable advantage in legal disputes. These occur chiefly where new projects involve land purchase or change, or land utilisation for industrial development.

Oblique Photography

In the latter circumstances vertical photography taken continuously with large overlap is necessary. Oblique photography is not suitable for strip work, but is particularly helpful for individual views. Expert interpretation is essential even when aided by site inspection. Many unexpected features can be revealed in this way which are not apparent when viewed from ground level. For these purposes the photogrammetric resources of the aerial survey companies can form an invaluable technical aid to any preliminary investigations.

Where plans or technical drawings such as surveys have to be referred to in Parliamentary committees, court cases, or legal disputes the use of oblique photography can often help to decide an issue.

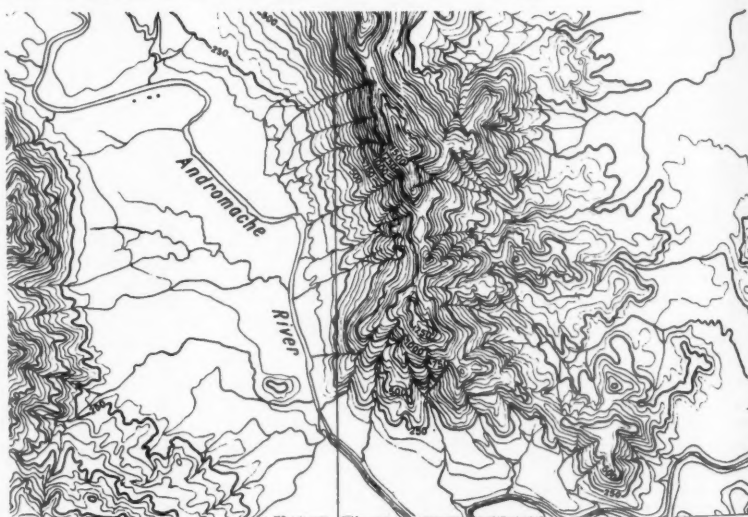


Photo courtesy

Section of survey map of Blair Athol, Queensland, prepared from an aerial photograph of the area

(Hunting Aerosurveys Limited)

Some of the aerial survey companies can from their photogrammetry produce an accurate scale model or diorama of a site. On this they can superimpose a model of the proposed structure. In certain instances this may be considerably more advantageous than photographs particularly where marked differences occur in relative ground heights. The use of such devices invariably far outweigh or save the relatively small cost involved. They can be used for demonstration purposes, Board meetings, publicity, and so on.

Works Planning

Aerial photography is one of the most versatile assets for the railway civil engineer. Amongst other things it can be used for: preliminary location of new schemes; surveys and plans; land records; works planning; progress photography; location of minerals; nature of standing timber; study of coastal and estuary problems; and river and dock works.

It is in the earliest stages of a pro-

this method has been successfully used on a number of such projects in this country. On the other hand it is equally helpful for heavily congested sites. For the location of projects in some of the wild and inaccessible territories overseas, aerial photography is the only reliable means of obtaining accurate surveys cheaply and quickly. The addition of contours to any required range, or spot heights can be added without the need to undertake any site levelling.

The routine flying of a railway has proved of considerable value and on the Eastern and Southern Regions of British Railways long lengths of track have been recorded in this manner. These photographs are immediately available for studying the vicinity of an emergency mishap and have enabled preliminary discussions to be reached quickly, often without the need to visit the site. The same photographs have also proved most helpful when planning a bridge reconstruction. Stereoscopic study of contact prints of a bridge at a remote site has revealed

7½ miles between Shortlands and Swanley, Southern Region, were taken monthly even through the winter.

Oblique aerial photographs are particularly advantageous for recording the progress of schemes where the site extends over a wide area, like a new marshalling yard. They were successfully used by the Scottish Region for some of their large marshalling yards at Thornton and Miller Hill. Ground views cannot possibly reveal the magnitude of the work as a whole. Oblique photography also lends itself admirably for dock and harbour works and for estuarial approaches.

Survey Work

For survey work, aerial methods are usually preferable both in time and cost, particularly where the terrain is difficult. This applies to remote areas over marshes, or over estuarial mud flats exposed only for limited periods by tides, or in mist shrouded high ground. On continuous runs of track within easy access of the surveyor's office there is little to choose in com-



The Bickley and Chislehurst loops, Southern Region, British Railways, before the start of re-alignment works

The same location several months after work had started, showing the general progress of the job

ject that aerial photographs of the location can prove so valuable. The site of a new scheme on the route of a proposed new railway or road should be flown even before the first walk-over. The photographs to a scale of from 1/1,000 to 1/10,000 can then be stereoscopically examined by an expert photogrammetrist. Even in the hands of a trained surveyor or engineer a very great deal can be gleaned from the methodical scrutiny of site photographs.

This critical pre-inspection of the route site photography will reveal not only what can be seen from the ground but much more that would either be missed, not seen, or not appreciated. The preliminary location of the proposed structures or line can be determined far more accurately than by any other means. It is particularly valuable over new or virgin ground, and

many of the difficulties that may be encountered in the work and which would not be apparent on a plan.

Electrification

One of the problems associated with electrification schemes has been the choice of suitable sites for sub-stations and overhead structures. Experience, especially on the London Midland and other Regions of British Railways, has shown the considerable help afforded by studying the photography. The contact prints can be used for this purpose before the survey has even been plotted, and as a preliminary to the walk-over. Subsequent flights at three monthly intervals for photographic purposes only, give an overall measure of the general work in progress. Ground photography is useful only for local progress. Strip photographs for electrification work progress over the

parison with conventional methods. Where, however, inaccessible or congested sites are involved aerial surveying comes into its own. Not only is it cheaper, but the time of technical staff and chainmen's time and lodging expenses are saved.

There is also the added advantage that the photography is available for preliminary inspection within a matter of days, and a draft survey from a machine plot can be used on which to start planning within a few weeks if need be. As to accuracy, such a high degree of reliability has been achieved that discrepancies, where they exist, are far less than the magnitude of error in actual usage of the survey. This aspect has, however, been discussed with greater detail in a paper read earlier in the year to the Institution of Civil Engineers, and reported in "The Railway Gazette" of February 7, 1958.

Fifth Railbus Design for British Railways

Wickham prototype with tubular construction, radius arm axlebox control and Meadows engine



One of five Wickham-built 105-h.p. railbuses for British Railways

THE last of five prototype railbus designs ordered for trial on rural lines of British Railways has now been delivered. This is built by D. Wickham & Co. Ltd., of Ware, Herts. The four-wheel vehicle incorporates the maker's normal method of tubular body construction, rubber suspension between body and underframe, a Meadows six-cylinder horizontal 6HDT500 derated to 105 b.h.p., radius arm-controlled axleboxes, and other features which result in a tare weight of 11½ tons for this 44-seat vehicle. The power unit rating is lower than the other railbuses; on test runs it has shown a fuel consumption of approximately 9 m.p.g.

Leading particulars of the vehicle are as follow:—

	ft.	in.
Overall length	39	10
Length over body	38	0
Width over body	9	0
Overall height	12	7
Wheelbase	19	0
Wheel dia.	2	9
Tare weight	11½	tons

Retractable steps with inside operating gear are fitted. Transverse seating is arranged to face the cab at each end, with triple and double seats on either side of the gangway. An additional tip-up seat is positioned by the cab.

Seats and squabs are in moulded Dunlopillo, trimmed in green patterned cut moquette with Vynide facings. The

saloon is lined throughout in light oak finish Waverite panels with cream Vynide roof lining. Marbled green neoprene rubber floor covering is fitted. The raking upwards of the tubular aluminium luggage racks give good headroom but restricts the capacity to some extent.

Cab

A cab is arranged at each end of the vehicle on the left-hand side. The sloping panel in front of the seat contains the speedometer in the centre, the air reservoir gauge on the left, and the brake gauge on the right. At each side are the push buttons for door operation and the low oil pressure and high water temperature indicator lights. On the driver's left, in the engine speed control with deadman handle, and on the right, the air brake valve. The flat top desk carries the gear-change control, handwheel for parking brake, forward-and-reverse selector, and horn lever. The engine start and stop push buttons and key switch are fitted on the electrical switch panel above the deadman control. This panel also contains the battery ammeter and lighting switches.

Body Construction

Construction of the body follows the general style used for the builder's multiple-unit British Railways diesels. A solid drawn steel square tube frame of 1½ in. × 10 g. section is used for the main members of the welded structure. The top-hat section floor supports are welded to the channel cross-members of 4½ in. × 2 in. × 10 g. section. On the floor supports is laid ½-in. aluminium



Arrangement of seating, with fixed seats facing away from centre vestibule



Layout of railbus driving controls

alloy sheeting and flame-proofed hard-board $\frac{1}{2}$ -in. thick. Both the inner and outer roof skins are of 16 g. aluminium, riveted to a formed spacer. Sprayed asbestos insulation is applied between the inner and outer body panels and around the heater ducting.

The sliding aluminium doors opening into the central vestibule are air-operated controlled by a push-button on the driver's desk.

The body is flexibly-mounted on six Cushyfoot mountings which incorporate rubber buffers to limit transverse movement.

An unusual method is used to deal with the problem of the exhaust pipe connection to the vertical tailpipe in the flexibly mounted body. At the lower end the tailpipe is formed as a venturi into which projects the exhaust pipe from the underframe. There is thus no mechanical connection, and the cold air drawn in by the venturi suction prevents any leakage of fumes. Cooling of the gas also improves the silencing it is stated. The large Beclawat fixed windows in each side have sliding ventilators and the driver's side window is of the full-drop type. Trico-Folberth wipers and a Clayton demisting fan are fitted for the front windcreens.

Car ventilation is by a row of Airvac ventilators in the roof. The heater duct in the floor discharges into the saloon through shallow circular domes positioned below the seats. The full-height vestibule partitions are fitted with large windows to provide through visibility. Polished aluminium chequer plate is used to line the vestibule and house the sliding doors.

Underframe

The underframe, which is the same length as the body and to which the leaf spring bumpers are fitted, is formed from two rectangular frames, braced together by vertical members to form a deep truss. Each frame is a welded $2\frac{1}{2}$ -in. \times 10-g. square tube structure of four longitudinal members with cross members of similar section.

The two axles are carried in Wickham cast steel axleboxes fitted with SKF self-aligning roller bearings. Axle suspension is by semi-elliptic underslung springs, clamped to the axlebox at their centre. The spring ends are supported by rubber pads which are held in brackets suspended from the frame.

These brackets are formed from two channels welded back-to-back on the inside and outside of the underframe. No horn guides are used, each axle being positioned by two rubber-bushed radius rods. A Woodhead Monroe hydraulic shock absorber is vertically mounted above each axlebox to damp spring oscillation.

Two 6 in. \times 5 $\frac{1}{2}$ in. brake cylinders for each axle are mounted on the inner frame longitudinally, operating through fully compensated clasp rigging. The handbrake at each end of the car operates on the adjacent axle through the power brake rigging.

Inside the non-driving axle a 70-gal. fuel tank is located, arranged for filling from each side. The Smiths combustion air heater is mounted transversely on the frame and fuel for the heater is drawn from the main fuel tank.

Power Unit

The engine fitted is the recently-introduced Meadows type 6HDT500 diesel, the rail traction version of the maker's automotive unit. For this application the engine is set to 105 b.h.p. at 1,800 r.p.m.

Water is circulated through the engine and cooling system by a belt-driven centrifugal pump mounted at the free end. The system is not pressurised, and in the delivery pipe between the engine and radiator is fitted a centrifugal steam trap which diverts any steam direct to the header tank. It is stated that this steam trap has given satisfactory results on some overseas applications.

The 8-gal. water header tank and the radiator are positioned on opposite sides of the underframe.

Transmission

Transmission from the engine is through a Wickham-Freeborn automatic coupling. This is a special form of multi-plate clutch which slips freely in the manner of a fluid coupling at idling speed, but at normal running speed the coupling locks to provide a solid drive.

Automatic engagement of the clutch is by a series of spring controlled pivoted centrifugal weights. The outer driving plates driven from the flywheel are of the normal plate-clutch type, with teeth on the outer rim. The inner driven plates are a series of circular discs, pin-mounted on the driven member in the manner of a ring of planet gears.

Each disc, with the outer portion sandwiched between two driving plates, is free to rotate on its bearing pivot. This rotation of the discs, which occurs only during the period of engagement, has the dual function of giving a smooth take-up of the drive and a cooling of the frictional surfaces. The relative velocity of the engaging surfaces is low and the discs stop rotating when the clutch is fully engaged. The pressure plate is loaded by the centrifugal weights thrusting outwards against wedge members. When the engine speed drops to idling, compression springs return the pressure plate to the clutch-free position. A small quantity of oil, $\frac{1}{2}$ -pint, is contained in the clutch for lubrication.

The S.C.G. type R11.C. four-speed gearbox is of the air-operated unit construction type. Top gear is through a multi-plate clutch, the indirect ratios through the epicyclic trains being 4.07, 2.42, and 1.6:1.

A Hardy Spicer shaft transmits the drive to the spiral bevel final drive 3.45:1 reduction unit mounted on the driving axle, which incorporates an air-operated sliding dog for the selection of forward or reverse. Torque reaction is taken through a rubber-bushed link anchored to the underframe.

The first three of the Wickham cars are fitted with the C.A.V. electro-pneumatic type manual gear selector. The switch contacts in the miniature change speed gear lever on the desk operate electro-pneumatic valves controlling the air cylinders on the gearbox.

Electrical Equipment

The C.A.V. type A6.8. a.c. generator is belt-driven from the auxiliary drive gearbox at 2.8 times engine speed. A germanium rectifier is used to rectify the a.c. current. The Nife battery type LR17, of 170 A-hr. capacity, is carried in a battery box fitted on each side of the underframe near the driving axle. In addition to the normal row of 60-W. saloon lights, a light positioned inside each doorway is automatically switched on when the door is opened.

Sub-contractors for the vehicles include:—

Engine	Henry Meadows Limited
Gearbox	Self-Changing Gears Limited
Cardan shaft	Hardy Spicer & Co. Ltd.
Wheels and axle forgings	John Baker & Bessemer Limited
Springs	Jonas Woodhead & Sons Ltd.
Tubing	Accles & Pollock Limited
Axleboxes	Skefko Ball Bearing Co. Ltd.
Shock absorbers ..	Woodhead-Monroe Limited
Rubber body mountings	Metalastik Limited
Brake equipment ..	Clayton-Dewandre Co. Ltd.
Electrical charging equipment, head lamps and gear controls	C.A.V. Limited
Horns	C. V. Desiderio Limited
Saloon lighting equipment	J. Stone & Co. (Deptford) Ltd.
Seats	Pel Limited
Luggage racks ..	Deans & Son (Yorkshire) Ltd.
Windows	Beckett, Laycock & Watkinson Limited
Paint	Docker Brothers
Heater and speedometer	Smiths Industrial Instruments Limited
Battery	Nife Batteries Limited
Wakelite panels ..	Wakelite Limited
Windscreen wipers ..	Trico-Folberth Limited

THE KENNETH BROWN RAILWAY COLLECTION.—Mr. Everard Kenneth Brown, solicitor, and for nearly 30 years President of the Railway Club, left estate to the gross value of £92,516. His extensive library of railway books is bequeathed to the John Rylands Library, Manchester, and items not required by the Library are bequeathed to the Railway Club.

BRITISH STANDARD FOR GEAR HOBBING MACHINES FOR SMALL PRECISION GEARS.—This 12-page publication, B.S. 3013:1958, is concerned mainly with fine pitch precision gears such as are used in instruments where the smallest possible errors in angular motion are an essential requirement. A companion publication, B.S. 1498, deals with the larger gears used in turbines and similar drives. The aim of the standard is to establish standards of accuracy for gear hobbing machines for the production of precision gears in a range up to 3 ft. dia. The section on inspection and testing includes accuracy limits for test blanks and test gears after cutting. Also included is a chart showing permissible transverse pitch errors. Copies of this Standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1. The price is 6s.

Peterborough Central Stores, Eastern Region

Replacement of three separate stores depots



Signal and telecommunication store, showing wire-cage pallets being handled by a fork-lift truck

A NEW central stores depot has been established at Peterborough, British Railways, Eastern Region, to provide a modernised stores service for common user non-technical materials, sundry materials for civil engineering, and signal and telecommunications materials.

The establishment of this depot has resulted in the closing of existing stores depots at Doncaster (Common User), Retford (Telegraph) and Godley (Mechanical Signalling); these depots are inadequate for modernisation requirements and unsuitable for accommodating and handling stocks in accordance with modern methods. A central stores service for civil engineering sundry supplies has also been inaugurated.

Because the supply functions for these services are distributive, the important factors to be considered in selecting premises were those of adequate accommodation, good rail facilities in close proximity to the stores depot and situated centrally within the Region so as to minimise long rail hauls, also the utilisation of existing premises for economy reasons.

Peterborough met all these requirements, there being suitable buildings available which had formerly been used for the production and repair of wagon sheets and were suitable for adaption for stores use with the minimum alteration and expense. The large buildings also enabled the maximum introduction of mechanical handling.

The stores are comprised of three main warehouses, one being allocated to common user and civil engineering

materials, one to signal and telecommunications materials, and the third is used for bulk storage.

Smaller warehouses are used for storage of furniture, paints and oils, and there is a covered area and open-air compounds for the storage of materials for which warehouse accommodation is not essential.

An office block has been located on

two floors with messroom and welfare facilities for both warehouse and office staffs.

Racking

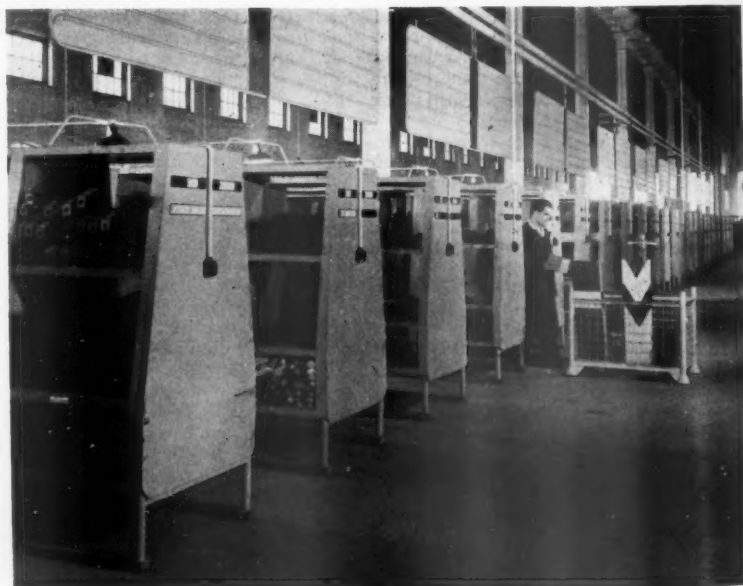
Racks and pallets have been used extensively in the layout of the warehouse. The racking is mainly of a type designed and constructed in the railway workshops from secondhand materials such as locomotive boiler tubes and timber.

The racking is used for accommodation stocks requiring to be physically controlled and handled. These operations have, therefore, been made as easy and efficient for the staffs as possible by restricting the height to 6 ft., using racks of tapered design with individual bin lighting. The racking is shelved and sub-divided to suit the type, size, and quantity of each item stored. Drawers accommodate small articles, each stock item being labelled with material description, code number, and minimum stock quantity.

The maximum use is being made of palletisation by post stillages, flat pallets, and special pallets to serve particular items. There are two fork lift trucks, a pedestrian operated truck, and internal petrol-driven transport trucks to carry the pallets. The flooring of the warehouses is of a dust-free finish and central heating to the whole premises is by an oil-fired boiler with overhead radiation and individual radiators.

Alterations to the permanent way layout in the stores yard were necessary for easy access of receiving and

(Continued on page 308)



Storage racks in signal and telecommunication store, showing individual overhead radiators for central heating

Australian-Built Railcars for Malayan Railway

Budd-type stainless steel vehicles with two 250-h.p. Rolls-Royce engines

REPRESENTING the first order for stainless steel rolling stock to be exported from Australia, six 500-h.p. diesel-hydraulic railcars with Rolls-Royce engines are now being delivered to the Malayan Railway.

The vehicles were designed throughout by Commonwealth Engineering Co. Ltd., of Granville, New South Wales, to suit the requirements of the metre-gauge Malayan Railway, and incorporate stainless steel construction of the Budd patent shot-weld process for which a licence was obtained from the Budd Company, U.S.A.

Accommodation is arranged for 12 second class and 42 third class seated passengers; speeds of up to 65 m.p.h. are envisaged on suburban and country services.

The coaches are designed for driving from either end without turning, driving positions and adjacent guards' compartments being arranged at each end of the vehicles. End communica-

tion doors are arranged for access between coupled coaches. The vehicles tare 32 tons which results in the power weight ratio of 15.6 h.p. per ton.

Painting of the railcars is obviated because of the non-corrosive characteristics of the stainless steel work. The slightly higher initial cost of stainless steel vehicles is stated to be adequately compensated by economies in maintenance charges.

Engineers of the manufacturer will be available in Malaya to train operatives and place the cars in service, and also to assist in the completion of the interior finish. This is to be carried out by the Railway workshops staff in Malaya.

The railcars will draw one or two aluminium trailer cars to be constructed at Kuala Lumpur to match the design of the Australian-built power cars. Operation in multiple-unit combinations and trailer units will be up to 12 vehicles.

The accompanying diagram shows the general design and layout of the railcars. Leading particulars of the vehicles are as follow:—

	ft.
Length over body	61 6
Maximum width	9 3
Height over radiators	12 2
Bogie centres	42 6
Bogie wheelbase	7 0
Wheel dia.	2 9½
Maximum designed speed	65 m.p.h.
Tare weight	32 tons

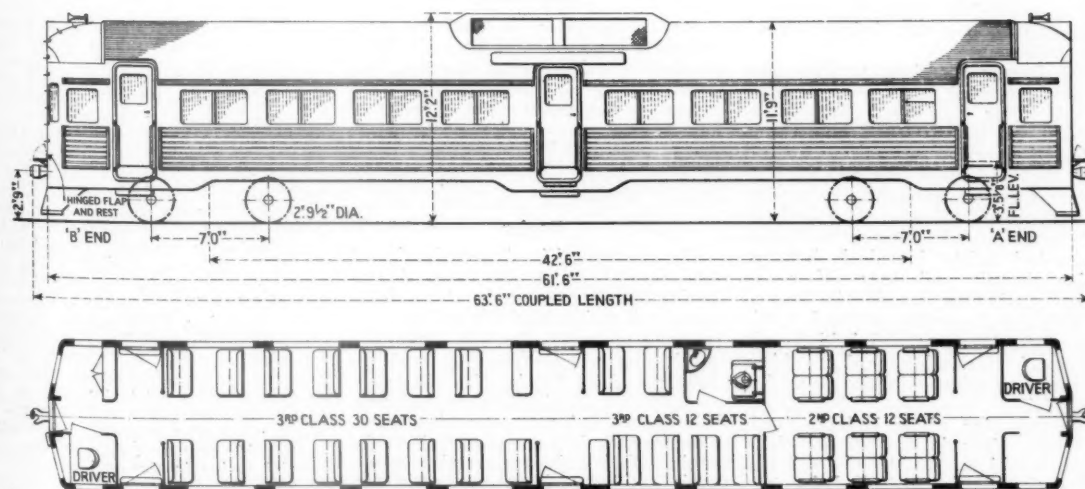
Construction

Structural members of the car framing assembled by the Budd Shot-weld process are made of stainless steel furnished to specifications of the Budd Company regarding chemical composition and physical properties. End underframe assemblies, consisting of headstock, drawgear longitudinalinals to bolster, and bolster, are fabricated from carbon steel by arc welding.

Alliance No. 2 couplers and Waugh Mat draft gear are fitted to each rail-



Exterior of Budd-type stainless steel Commonwealth-built diesel railcar



General arrangement and layout of 500-h.p. railcar for Malayan Railway

car; and the centre line of the drawgear is 2 ft. 9 in. above the rail height at tare loading.

Engines

Each railcar is powered by two 250 h.p. six-cylinder pressure-charged inclined Rolls-Royce diesel engines, which are arranged with automatic shutdown in the event of high water temperature, high converter oil temperature or low lubricating oil pressure. If this takes place the engine safety circuit also returns the respective transmission to neutral and a warning light on the driver's controller indicates that one engine has failed.

The power unit is enclosed in a light sheet-metal box, which has quick-action locks on removable panels where frequent service or inspections are required. The underside of the box is arranged with simple fasteners so that it may be removed quickly, when required, for engine removal or maintenance. Jacking points on the engine allow the engine to be removed on a simple wheeled engine dolly.

A Twin Disc torque converter incorporating clutches for converter and direct drive is mounted on the engine. The forward-and-reverse gearbox, at the output end of the converter, consists of bevel gears with an air-actuated sliding dog clutch mounted in a housing.

Wide-angle Hardy Spicer universal joints and cardan shaft connect the reversing and the final-drive gearboxes. The latter is mounted on the inner axle of each bogie and the drive at each axle is one set of spiral bevel gears. The final-drive box is attached by means of a torque arm to the bogie frame with resilient rubber mountings.

Control

The engine and transmission unit is operated by a single controller on the driver's control station. Each controller has two hand levers, one for operation of the forward-and-reverse gear, the other for the engine throttle and transmission. The latter has a loose handle, one only being used on each train.

The former has three positions for forward, neutral and reverse. The throttle lever has five positions as follow:—(a) engine speed idling, forward-and-reverse gearshift neutral when throttle lever is placed in the controller (forward-and-reverse controller can only be moved when throttle lever is in position "A" thus providing a mechanical safety inter-lock between engine throttle and gear shift); (b) engine speed idling, gearshift in forward or reverse and gearbox engaged, car is now ready to move and held by air brakes only; (c) engine speed one third; (d) engine speed two thirds; (e) engine speed full.

The operation of the lock-up clutch may take place in any of the three throttle positions "C," "D," "E." The engine throttle is controlled by two solenoids, No. 1 being energised for one-third speed, and No. 2 for two-

third speed. The two are energised together for full speed.

Electrical control equipment for the engine, transmission, and so on in the form of fuses, switches, relays and terminal bars is grouped in a control cabinet adjacent to the driver's control station at one end of the car.

A pressure switch is attached to the brake cylinder pipeline to ensure that all engine throttles are returned to idling during brake application, to prevent overheating of the torque converter.

Deelman's controls are incorporated in the throttle handle and a foot-operated switch. Engine start buttons are arranged with oil pressure and water temperature gauge on a weather-proof panel attached to the engine assembly in a position accessible from track level. Engines can only be started and stopped from their respective panels.

Fuel for both engines is carried in a 120-gal. capacity fuel tank mounted on the underframe. Provision is made for filling from either side of the car and fuel level gauges are adjacent to each filling head. Engine-driven pumps lift fuel from the tank to the injector engine pump.

Engine Cooling

Radiators for engine cooling are mounted at the roof of the car above the centre vestibules. Hydraulic radiator fan motors are driven from a pump on each engine and the radiator cooling air is exhausted above the roof of the car. Cooling water temperature is thermostatically controlled.

An exhaust silencer for each engine is mounted in vertical insulated ducts positioned between the centre doorways. The exhaust pipe terminates above the roof of the car, between the radiators. Air cleaners fitted to the engine air intake are of the oil bath type and arranged so that the intake air is taken from the vestibule of the car through ceiling ventilators.

Compressors

One compressor is fitted on each engine to supply air for controls, horn, windscreen wiper, sand ejectors, and water raising equipment. Two sandboxes are mounted on the underframe adjacent to each bogie; electro-pneumatic control of the sanding air is initiated by a press button on the driver's controller.

Bogies

The four-wheel bogies are fabricated and are of single equaliser beam design, having the bolster mounted on long-travel coil springs and the spring plank mounted on long swing links. Hydraulic shock absorbers are fitted to the bogie bolster, and the 33½ in. dia. wheels are of solid disc multi-wear type and suitable for the fitting of tyres when worn.

Brake cylinders are mounted on the bogie. Slack adjusters are also on the bogie and are of the automatic air-operated type with air piston, ratchet and screw. Brake blocks are of a com-

position type. Air brake equipment is supplied by Australian Westinghouse. Each vehicle has an external handbrake which acts on one bogie, with operating handles on each side of the car.

Electrical Equipment

A Stone 24-V. generator on each engine is arranged for parallel charging of a 420 A.-hr. at 5-hr. rate lead-acid battery mounted in polyester glass fibre battery boxes on the underframe. The passenger saloons have incandescent lighting fittings along the centre of the roof. Drivers', guards' and toilet compartments have Stone Luxton single incandescent lamp fittings.

Two 250-W. headlamps are fitted, one at each end of the railcars, with the necessary marker lights. Fixed fans also of Stone manufacture are situated in the ceilings of the saloons; one 9 in. dia. oscillating fan is located in each driving compartment.

Peterborough Central Stores, Eastern Region

(Concluded from page 306)

despatching wagons. The yard was also re-surfaced and re-lighted.

Some 2,000 using department delivery points are supplied from the stores and some 4,500 items of material are stocked.

Distribution

Specially-fitted rail vans are used to distribute stores to stations at three-monthly intervals. These vans are attached to trains specified by the Traffic Department and accompanied by stores issuing staff who issue to individual stations en route.

The vans are racked and the materials coded as in a normal warehouse, and the standard quantity of each item to be carried is indicated.

Local control of the Stores is supervised by Mr. F. G. Eagle, the Store-keeper.

FIRST SILICON RECTIFIER FOR TRACTION SERVICE.—The first silicon power rectifier to be used to convert electric power for traction service in Great Britain has been installed experimentally in a motor-coach on the Lancaster-Morecambe-Heysham line of British Railways, London Midland Region. The equipment was manufactured by the British Thomson-Houston Co. Ltd. Although this line is in public service it has, since its re-equipment on the 50-cycle system, been used by the British Transport Commission as a testing ground for a.c. 50-cycle traction equipment. The coach in which the silicon rectifier has been installed has been operating successfully since December, 1955, with an equipment using germanium cells, also of B.T.H. manufacture, and this has now been removed to accommodate the silicon equipment. The original equipment comprised 600 germanium cells, but the new rectifier embodies only 192 silicon cells of comparable unit size, representing a substantial saving in size and weight. The silicon cell can operate without danger at a considerably higher temperature than is permissible with a germanium cell.

RAILWAY NEWS SECTION

PERSONAL

Mr. Frank A. Pope has been appointed to the boards of Nyasaland Railways and the Trans-Zambia Railway Company in place of the late Sir James Milne.

Mr. T. C. Courtney, M.E., Chairman of Coras Iompair Eireann, who, as recorded in our September 5 issue, has resigned was born at Cork in 1894. He was educated

man of Coras Iompair Eirannean in 1949. He conducted numerous inquiries on behalf of the Government, and for ten years was Railway Inspecting Officer to the Department of Industry & Commerce.

Mr. H. C. Sawyerr, Establishment Officer in charge of the Stores Department, and Mr. J. O. Awodipe, Assistant Establishment Officer, both of the Nigerian Railway Corporation, are at present on a

Dr. C. S. Andrews, B.Comm., D.Econ.Sc. (Honoris Causa), Managing Director of Bord na Mona, as recorded in our September 5 issue, has been appointed Chairman of Coras Iompair Eireann, was born in Dublin in 1901. Dr. Andrews was educated at Christian Brothers' School, and University College, Dublin. He served in the Dublin Brigade, I.R.A., from 1917 to 1921. From 1926 to 1930 he was Accountant of the Irish Tourist Association, and was



Mr. T. C. Courtney
Chairman, Coras Iompair Eireann,
1949-58



Dr. C. S. Andrews
Appointed Chairman, Coras Iompair
Eireann

at the North Monastery and Presentation Brothers' College, and at University College, Cork, where he took his B.E. (Civil) degree in 1916. Later that year he was appointed Assistant in the Chief Engineer's Office, Cork, Bandon & South Coast Railway. In 1917 he joined the firm of Henry Ford & Son in connection with the building of its assembly plant at Cork; and in the next year transferred to Harland & Wolff Limited, and was concerned with the construction of a new shipbuilding yard at Belfast. He returned to Cork for the completion of the Ford works, where he remained until he joined the National Army in 1922. He held the rank of Major, and was largely responsible for the organisation of the Corps of Engineers, before transferring to the Department of Local Government as Engineering Inspector in 1925. In 1930 he was appointed County Surveyor for Tipperary (North Riding), and in 1934 became Chief Engineering Adviser, Department of Local Government. Mr. Courtney was appointed Chair-

man of Coras Iompair Eirannean in 1949. He conducted numerous inquiries on behalf of the Government, and for ten years was Railway Inspecting Officer to the Department of Industry & Commerce.

Mr. H. D. Poole, Rates Assistant to the Commercial Officer, Paddington, Western Region British Railways has retired after 52 years of railway service.

Mr. E. S. Ely, Docks Mechanical & Electrical Engineer, Southampton Docks, British Transport Commission, has retired as a result of reorganisation.

Mr. J. Higginbotham has been appointed Deputy General Manager, Engineering Department, Edgar Allen & Co. Ltd., and Mr. J. D. Studholme as Assistant General Manager.

appointed Senior Accounts Inspector, Electricity Supply Board, from 1930 to 1933. Dr. Andrews was the first Managing Director of the Turf Development Board (now Bord na Mona), 1934-58; Fuel Director, 1943-46; a member of the Drainage Commission, 1938-39, and, later, a member of Council of the Irish Management Institute. He has read a paper before the Statistical Society and has written several reviews and articles.

Two members of the Great Northern Railway Board, Messrs. W. McMullen and F. Molony, have been appointed to the Board of Coras Iompair Eireann, and will remain members when the G.N.R. goes out of existence on October 1. The other members of the new C.I.E. Board, will be Messrs. L. Ferris, T. P. Hogan, and J. T. O'Farrell, all of whom serve on the present Board.

Sir Leonard Sinclair, Chairman, Esso Petroleum Co. Ltd., has been appointed a

part-time member of the British Transport Commission.

Mr. G. H. Binnie, M.I.Mech.E., M.I.Loco.E., Assistant Chief Mechanical Engineer, Nigerian Railway Corporation, who, as recorded in our August 1 issue, has been appointed Chief Mechanical Engineer, began his railway career as a Premium Apprentice in the Locomotive Works at Swindon, on the former Great Western Railway. In 1932, after three years at Swindon, he entered the service of the Indian State Railways, and was posted to

Mr. C. R. Atkins, Stores Superintendent, Scottish Region, British Railways, has retired.

Mr. E. C. Taylor, Pay-Rolls Officer, London Transport Executive, has retired after 46 years service. He will be succeeded by Mr. N. G. Robins, Cost Assistant in charge of the Catering Costs Office.

Mr. F. P. Arnold, a member of the Tiling Group Management Board, British Transport Commission, is retiring on

and its subsidiaries Wota Limited, Meboe Limited, Matling Limited and Jet-Lube Limited. Mr. Gerard Young, Chairman, and Mr. J. B. Curry, Managing Director, have left the service of the companies and the other directors, Mr. D. Blank, Mr. C. P. Choularton, Mr. C. E. Elwell, Mr. G. T. Bowerman and Mr. M. A. Curry have resigned. Mr. Bowerman continues as Secretary.

Mr. A. G. Pilling, who, as recorded in our June 27 issue, has been appointed Chief Mechanical Engineer, Paraguay



Mr. G. H. Binnie
Appointed Chief Mechanical Engineer,
Nigerian Railway Corporation



Mr. A. G. Pilling
Appointed Chief Mechanical Engineer,
Paraguay Central Railway

Burma as Assistant Locomotive Superintendent. He served in the Indian Engineers in India and Burma from 1942 to 1946, commanding a railway operating company. He was Works Manager and District Mechanical Engineer on the Burma Railways, retiring in April, 1947. He became Railway Mechanical Engineer, Aluminium Development Association, for six months, until appointed Works Manager on the Nigerian Railway at the beginning of 1949. Mr. Binnie became Assistant Chief Mechanical Engineer in 1955.

Mr. H. Bell, District Motive Power Superintendent, Newcastle, will also take charge of the Sunderland Motive Power District when the Newcastle and Sunderland Districts are combined on September 15, 1958.

Mr. W. G. Goff, Personnel Manager, Dunlop Rubber Co. Ltd., at Fort Dunlop since 1945, has retired after 44 years with the company.

December 31, 1958, after more than 50 years service in the road passenger transport industry.

Mr. W. H. Glass, who has been a director of Thermotank, Limited, for the past 25 years, has retired from the board of the company. Mr. Glass, who joined Thermotank, Limited, in 1916, received his early training with the Caledonian and the North British Railway Companies and with the North British Locomotive Co. Ltd. His services will still be available to the company in a consultant capacity.

A.B.C. Coupler & Engineering Co. Ltd. and its subsidiary companies have ceased to be subsidiaries of Cranleigh Development Corporation Limited (a subsidiary of Latiq Investments Limited). Under the change in control which has taken place, Mr. W. V. S. Sinclair has been appointed Chairman, Mr. J. L. Burden, Managing Director, and Mr. D. A. Cross a director of A.B.C. Coupler & Engineering Co. Ltd.

Central Railway, was born in England in 1902. Mr. Pilling was educated at Oundle School, and served an apprenticeship at Eastleigh Locomotive Workshops of the former Southern Railway. In 1926 he was appointed a locomotive draughtsman at Pérez Locomotive Workshops, Central Argentina Railway. He became Assistant Inspector, Carriage & Wagon, Outdoor & Hydraulic Section, in 1934, and subsequently held various appointments in the Outdoor Section until his retirement, in 1953, as Assistant Superintendent. From 1953 to 1957, Mr. Pilling worked on his own account as a contractor to firms installing industrial plant in Argentina. In 1957, he was appointed Assistant to the Chief Mechanical Engineer, Paraguay Central Railway. Mr. Pilling's present appointment took effect on March 1, 1958.

Mr. Robert Willis, General Secretary, London Typographical Society, has been elected Chairman of the General Council of the T.U.C.



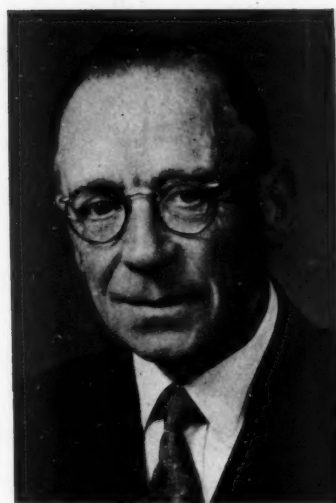
Mr. J. B. Owen

Appointed Contracts Officer,
Southern Region, British Railways



Mr. A. Shoemack

Indoor Assistant to the Commercial Manager,
Paddington, Western Region, 1951-58



Mr. A. Petrie

Assistant to Chief Commercial Manager
(Passenger), Scottish Region 1953-58

Mr. J. B. Owen, who, as recorded in our July 11 issue, has been appointed Contracts Officer, Southern Region, British Railways, was educated at St. Edmunds School, Canterbury, and the Birmingham Central Technical College. Mr. Owen joined the General Electric Co. Ltd. as a student apprentice in 1932, and afterwards spent 14 months in their Estimating Department. In 1937 he became a sales engineer with Siemens Schubert (G.B.) Limited, and at the end of 1938 he rejoined the General Electric Co. Ltd., in the Contract Department. For four years during the war he was attached to G.E.C. Research Laboratories, Wembley. In 1946, he joined the Southern Railway, becoming Assistant-General (New Works) Southern Region, British Railways, in 1949 and Senior Technical Assistant (Power Supply) in 1951. In 1956 he was appointed New Works Engineer (Power Supply), in charge of the electrical fixed installations for the Kent Coast Electrification.

Mr. E. C. Edwards, Dock Manager, Plymouth, Great Western Railway, from 1928 to 1932, whose death was recorded in our September 5 issue, entered the service of the Taff Vale Railway at Penarth Docks in 1889. Mr. Edwards later became Chief Assistant to the Docks Superintendent, Penarth. Following the amalgamation of the Taff Vale Railway into the Great Western Railway, Mr. Edwards became first Dock Superintendent, and subsequently Docks Manager. He was transferred to Plymouth, as Docks Manager, in 1928, a position he held until his retirement in 1932.

We regret to record the death, on September 3, of Mr. H. McDermott, formerly a senior engineer in the Railway Department of Messrs. Rendel Palmer & Tritton. He had served for more than 50 years with the firm.

We regret to record the death on September 5, at the age of 78, of Sir Frederick Charles Yapp, a former director of Vickers Limited. On his retirement from the board, in 1951, he had completed just under 50 years service with the Vickers Group.

Mr. Arthur Shoemack, Indoor Assistant to the Commercial Officer, Paddington, Western Region British Railways, who, as recorded in our August 22 issue, has retired, joined the former Great Western Railway at Birmingham (Hockley) in 1907, and gained an all-round experience in goods station working during the next 20 years. After periods in the District Goods Manager's Office, Birmingham, and the Chief Goods Manager's Office, Paddington, Mr. Shoemack took charge of the General Office of the Bristol District Goods Manager. He became successively Chief Clerk, at Bristol Goods, Paddington Goods, and to the London District Goods Manager. In 1946 he was appointed Goods Agent at Brentford and later at Smithfield. In 1948 he became Assistant District Goods Manager, Birmingham, and in 1949 occupied a similar position in London. Two years later he was appointed Indoor Assistant to the Commercial Officer at Paddington. Mr. Shoemack was a member of the Modernisation & Works Progress Committee, also the Suggestions sub-Committee.

Mr. Peter Liddell has been appointed General Manager of the Dunlop Rubber Co. (Indonesia) Ltd. and has now taken up his post.

Mr. E. Aubrey Stringer, who recently retired from the position of Sales Manager, Turner Bros. Asbestos Co. Ltd., has been appointed Sales Director, Thomas Whittle & Sons Ltd., Warrington.

Mr. K. Bartlow has been appointed Washington representative for the Export Department of Le Tourneau-Westinghouse Company, Peoria, Illinois. He succeeds Mr. G. W. McLaughlin who has been appointed Manager of Distribuidora de Equipos de Construcción, Mexico City.

Mr. F. J. E. Tearle, Director of Associated Electrical Industries Limited, and Managing Director of Associated Electrical Industries Overseas Limited, has been presented with a silver tankard, by Viscount Chandos, Chairman of A.E.I. Limited, in recognition of 35 years service with the A.E.I. group of companies.

Mr. Alexander Petrie, Assistant to the Chief Commercial Manager (Passenger), Scottish Region, British Railways, who, as recorded in our August 1 issue, has retired, began his railway career on the former Caledonian Railway in 1909 as a signal cabin boy at Larbert. Between 1910 and 1914, Mr. Petrie gained clerical experience at stations in that district. He joined the R.A.M.C. in August, 1914, and served in France with Field Ambulance Units. On demobilisation in 1919, he resumed railway service as Booking Clerk at Larbert and, in 1922, was transferred to the District Superintendent's Office, Grangemouth. In January, 1925, Mr. Petrie was appointed to the Commercial Superintendent's Office, Glasgow (L.M.S.). In 1950 he became Clerk-in-Charge, Passenger Rates & Fares Section of that office. In that capacity he represented the Scottish Region of British Railways on the panel of Passenger Commercial Assistants dealing with the British Transport Commission Passenger Charges Scheme. In 1953 Mr. Petrie was appointed Assistant to the Chief Commercial Manager (Passenger).

Mr. G. A. A. Houlton has been appointed Engineer-in-charge, straddle carrier project, of Short Bros. & Harland Ltd.

Mr. G. W. Kelland has been appointed Public Relations Officer to the Birfield group of companies.

Mr. W. G. Pinder, Managing Director, Crossley-Premier Engines Limited, has joined the board of the parent company, Crossley Brothers Limited. Mr. Hugh Beck and Mr. John Ivor Pugh have been appointed Directors of Crossley-Premier Engines Limited. Mr. John Shiels has been appointed Secretary & Chief Accountant of the company.

Dr. R. V. Hughes, Chief Projects Engineer, Diesel Engine Division, English Electric Co. Ltd., has joined Ruston & Hornsby Limited and is now responsible for the general administration of the new research centre and the technical development programme for the complete range of diesel engines of that company.

NEW EQUIPMENT AND PROCESSES



Precision Drill Borer

THE K. & W. V.19 precision drill borer bridges the gap between the conventional vertical drilling machine and the tool room type of jig borer. It is a workshop machine designed for operations including drilling, boring, tapping, facing, chamfering, and so on, at fast cutting rates on a wide range of components in a variety of materials.

The machine eliminates the need for jigs or marking out on medium batch work. Table positions can be read directly from the large dia. dials to an accuracy of 0.001 in. Where greater accuracy is required tracks are arranged to receive measuring rods reading from dial indicator gauges.

Motorised table movements, push-button controlled, balanced spindle and spindle head are incorporated for easy and quick operations. The standard speed range is of twelve speeds from 1,500-45 r.p.m.; alternative ranges are available. There are nine rates of power feed by lever changes, obtained in a similar manner to the speed changes.

Leading particulars include: spindle centre to guide ways on column, 13½ in.; spindle centre to column, 18½ in.; spindle length of feed, 11 in.; spindle distance to table, max., 2 ft. 2 in., min., 3 in.; working area of table, 3 ft. × 1 ft. 8 in.; table

cross traverse, 2 ft. 6 in.; drilling capacity in m.s., 3 in. dia.; tapping capacity, 2 in. B.S.W.; floor space, 6 ft. 9 in. × 7 ft. 6 in.; total height, 10 ft.; net weight, approx. 4 tons.

The spindle head has a 12-in. adjustment on the slideways on the front face of the column. It carries the main bearing for the spindle assembly. This is a honed bore 12 in. long and has adjusting screws to take up wear. As the accompanying illustration shows, the column and base are of robust design. The column houses the electrical control gear and is bolted to the base which has a built-in sump for a self-contained motor-driven coolant pump. A coolant pump and fittings to the spindle nose are offered as an extra.

Full details of the V.19 drill borer may be obtained from the manufacturer, Kitchen & Wade Limited, Arundel Street, Halifax.

Welding Equipment Improvements

CERTAIN design improvements have been made to the Saffire range of welding and cutting equipment to increase its operating efficiency and the ease with which its components can be interchanged.

The equipment can be used for welding, cutting, gouging, heating and flame cleaning. The equipment is available, as before, in three outfits: as a general engineers' set, motor engineers' set and agricultural set.

To allow of the conversion of existing equipment to the improved type, the manufacturer has introduced arrangements under its Service Exchange scheme. This enables existing components to be modified at a nominal charge. Further details may be obtained from the manufacturer, British Oxygen Gases Limited, Spencer House, St. James's Place, S.W.1.

Revolving Lathe Centres

THE range of Rotor Live Lathe Centres, is to be improved and will incorporate a spring device to compensate for axial growth because of thermal expansion. This feature is also stated to be valuable in the case of repeated shock loads occurring during an operating cycle.

The maximum elastic support is provided by a special plate spring behind the raceway of the balls in the thrust bearing. This ensures a rigid support at the point

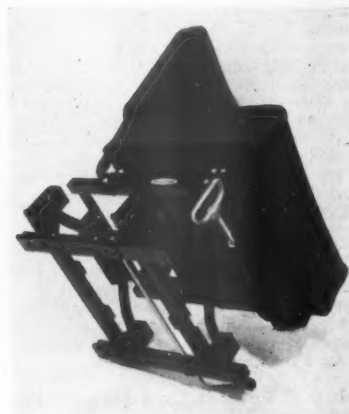
of maximum load without any deflection. The centres have a guaranteed concentricity of 0.00008 in. which is maintained over many years of operation. The rotating spindle is guided by the full length of the tapered shank. Two adjustable roller bearings carry the radial load and a thrust bearing takes the entire axial thrust.

Free access of the cutting tools results from the small outside diameter by using needle roller bearings and the tapered outer sleeve.

The distributor of Rotor Centres in Great Britain and the British Commonwealth is Insley Industrial Supply Co. Ltd., 21-22, Poland Street, London, W.1, from which company further details may be obtained.

Heavy Duty Seat Suspension

A METHOD of seat suspension, the Leveroll Level-Ride, has been introduced to this country. This provides a level ride for heavy vehicle drivers under all conditions, the suspension compensating for all shocks and jerks. Apart from the improved comfort afforded, the suspension

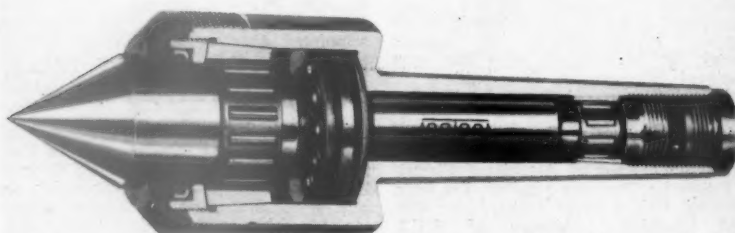


has been found to reduce fatigue and sickness, and is considered to add a high safety factor.

The manufacturer in the U.K. has been working for several years with the Bostrom Company of Milwaukee, U.S.A., on the development of a seat suspension which isolates the driver from vibrations caused by rough roads and terrain and from vehicle vibration frequencies.

The Level-Ride system consists of levers and linkages working in conjunction with two rubber torsion springs, which absorb all ground shocks and gives the driver, it is claimed, a smoother ride than was previously possible. A wide adjustment, controlled from the seat, caters for the difference in the weight of individual drivers. The suspension also allows fore and aft adjustment in the form of double locking Leveroll slides operated by a handle on the left-hand side.

Vertical adjustment is not provided, although a system is now being designed for this purpose. For heavy duty vehicles operating over extremely rough country, it may be desirable to include a shock



absorber, and a suitable unit is available complete with brackets.

A model of the suspension designed for use on goods vehicles is now available in pre-production quantities which can be supplied to manufacturers or operators at a nominal price so that service tests can be carried out under the required conditions. A comfortable seat with tubular frame and adjustable backrest has been designed for use in conjunction with the suspension, which is shown in the accompanying illustration, but any of the maker's standard seats can be fitted.

Further details of the suspension system may be obtained from the manufacturer, A. W. Chapman Limited, Ranelagh Gardens, Fulham, London, S.W.6.

Powder Fluxes for Submerged Arc Welding

WITH the trade name Muraflex, a group of powder fluxes has been developed for submerged arc welding. Muraflex A, the first of these, is a general-purpose flux designed for the submerged-arc welding of mild steel. It can be used on either a.c. or d.c. supplies with welding currents up to 900 A., and on all machines suitable for submerged-arc welding.

It can be used with a mild-steel filler wire containing approximately 2 per cent manganese or with a normal mild steel wire. Both types of wire, known as Murawire W1 and Murawire W2 respectively, can be supplied by the manufacturer. When used with Murawire, the flux is stated to produce good-quality welds of a high radiographic standard, suitable for Class 1 work. Used with Murawire, it has been granted approval by Lloyd's Register of Shipping and is accepted by the Ministry of Transport.

It is suitable for either the single-pass or multi-pass welding of various joints in mild steel, besides plug welds and the building up of worn mild steel parts. Good penetration is claimed. The unfused flux can be recovered and re-used.

These wires and fluxes are part of an automatic arc welding service made available by the manufacturer, Murex Welding Processes Limited, Waltham Cross, Herts; equipment includes the Muramatic welding head, deckwelders, booms, manipulators, and power packs.

Freewheel Clutch

A FREEWHEEL clutch, with a capacity of $\frac{1}{2}$ h.p. at 1,500 r.p.m., depending upon load conditions, has been designed. The freewheel is stated to be suitable for extremely low temperatures and tropical conditions. The essential components of the freewheel, shown in the accompanying illustration, are:—housing, pinned to shaft, A; cam, with gear attached, B; cage to hold rollers in correct position, C; spring, to hold cage in position, D; stop pin, E; roller, F.

The housing A is normally the driving member and is fixed to the shaft by a mill pin. The cage C holds the rollers into the wedge formed by the housing and cam B, when the housing rotates in the same direction as the cage spring force, engagement takes place and the drive is transmitted through the cam to the gear.

If the gear rotates faster than the housing, freewheel action takes place; similarly, if the drive is stopped, the gear is free to rotate independently of the housing.

Alternatively, the gear can be the driving member, the freewheel action being as described above, except that the rotation is reversed unless spring D is changed. The action of spring D and the cage C prevents any backlash so that drive take-up is smooth.

The freewheel is supplied complete with all parts, except the shaft. Price of the complete unit is £3 3s. 6d. ex-works. Further details may be obtained from the manufacturer, Tiltman Langley Limited, Redhill Aerodrome, Surrey.

Industrial Detergent

A DETERGENT for the removal of oil, grease, dirt or grime from all surfaces is now available. With the trade name Dertolit, it can be used for cleaning oil and grease from concrete and cement flooring and renderings, machinery, and tools, and so on. It acts by emulsifying the grease.

It is a highly concentrated, clear, slightly yellowish liquid; and it is also almost odourless, and non-inflammable. It is composed of modern synthetic detergent substances and is thus not an abrasive, organic solvent or a soap. One to two tablespoons of Dertolit are stated to produce 10-20 qt. of full-strength detergent liquid.

The product is manufactured by Exsud Engineering Limited, Home Industrial Division, 26-27, Cowcross Street, London, E.C.1.

Electrode for Mild Steel

AN iron powder electrode, suitable for welding mild steel, has been introduced with the trade name Ferrolux. It is designed for high speed welding operations in the flat and horizontal-vertical positions.

Using a touch-welding technique, the electrode can be drawn out to make long, smooth fillet welds. This fillet shape is mitre with a neat ripple. Slag detachability is good and the electrode is of value in production work where high output and good weld profile are required characteristics.

Iron powder electrodes are stated to give increased speeds and longer run lengths when compared with conventional electrodes.

To ensure instantaneous arc starting, Ferrolux electrodes are lightly tipped at the striking end with a special composition during manufacture, for which a patent has been applied. They are fully extruded and are made in 18-in. lengths in sizes from 10 s.w.g. to $\frac{1}{4}$ in. dia.

The electrodes conform to the requirements of B.S. 639:1952 and are approved by Lloyd's Register of Shipping and the Ministry of Transport and Civil Aviation. They can be used with a.c. or d.c. welding plant. When d.c. is used, the electrode should be connected to the positive pole.

The following results are typical of those obtained from all-weld-metal test specimens welded with the various sizes of the electrodes in accordance with B.S. 639:1952. Yield stress, 29 tons per sq. in.; ultimate tensile stress, 34 tons per sq. in.; elongation 3.54D, 28.5 per cent; reduction in area, 48 per cent; Izod impact value (V-notch), 63 ft. lb.; and bend test over 180 deg. without failure.

Further details may be obtained from the manufacturer, Quasi-Arc Limited, Bilston, Staffs.

Inflatable Dunnage Bags

AN inflatable rubber dunnage airbag which can be used to prevent the movement of goods in railway wagons, lorries and so on, has been developed.

Freight is braced in a variety of ways, the most common being by wooden shoring. This type of dunnage is a slow and expensive operation, and the shoring may collapse, because of high speed vibration or shunting impacts.

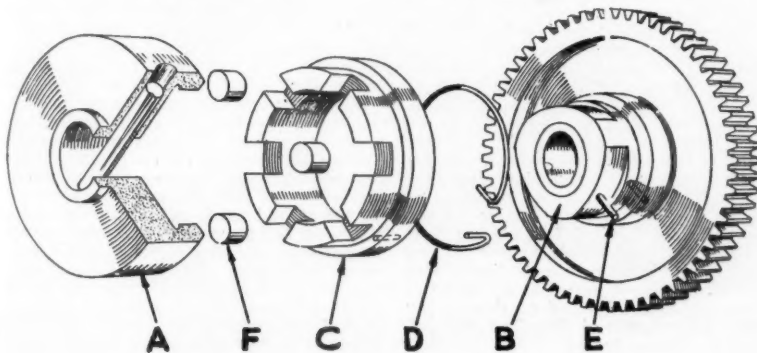
The airbags are slightly inflated to shape, slid into position and then blown up to the required pressure according to type of cargo. An air supply must be available for inflation, but no skill or special tools are needed.

Considerably less time than was required previously is necessary to shore up goods, but the bags also absorb shocks and vibration. They are deflated quickly by unscrewing a valve, and can then be folded in a small parcel to be returned for further use.

Each bag consists of an outer casing of a coated nylon fabric, and an inner bladder. They can be made in various sizes from 2 ft. x 4 ft. to 4 ft. x 8 ft. When inflated, single bags can be used to brace gaps up to 16 in., but for larger gaps superimposed bags would be necessary.

A reinforced closure allows for the renewal or repair of the inner bladder. Inflation is through a non-return valve. The tough outer cover affords protection against abrasion, oils and petrol, and weathering. The weight of each bag is approximately 25 lb. The manufacturer is prepared to make up the bags to individual requirements.

Further details may be obtained from R.F.D. Co. Ltd., Godalming, Surrey.



Ministry of Transport Accident Report

Milngavie Junction, December 7, 1957;
British Railways, Scottish Region

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred at about 11 p.m. on December 7, 1957, at Milngavie Junction, near Westerton station, when the 10.15 p.m. passenger train, Airdrie to Milngavie, consisting of 7 bogie coaches drawn by a V.I. class 2-6-2 engine which was travelling under clear signals at about 15 m.p.h., over the junction to the down branch line, after stopping at Westerton, was met almost head on by a class V3 2-6-2 engine travelling light at about 20 m.p.h., which had failed to observe signals against it. This severely damaged and derailed both engines and the two leading coaches of the train; in the first two coaches there was some telescoping. There were about 20 passengers, three of whom, with the light engine fireman, had to be taken to hospital; the fireman was detained but discharged after four days. Train driver and fireman were bruised and some passengers complained of shock.

A call for ambulances reached control at 11.3, on information from the signal-

The light engine crew came on duty at 5.0 p.m. and had arrived at Balloch at 10.20 with a train from Bridgeton Cross; they left there light at 10.36. They were stopped at Dalmuir, 3½ miles from Milngavie at 10.55, starting again a minute later. The driver said he saw all signals up to the distant for Drumchapel, the box in rear of the junction, but failed to see the home, with junction distant below, also the junction outer home and signalman's red lamp. He saw the inner home, applied the brake fully and started to reverse.

The fireman did not see any signals until near the junction when he noticed the red lamp and the inner home at danger.

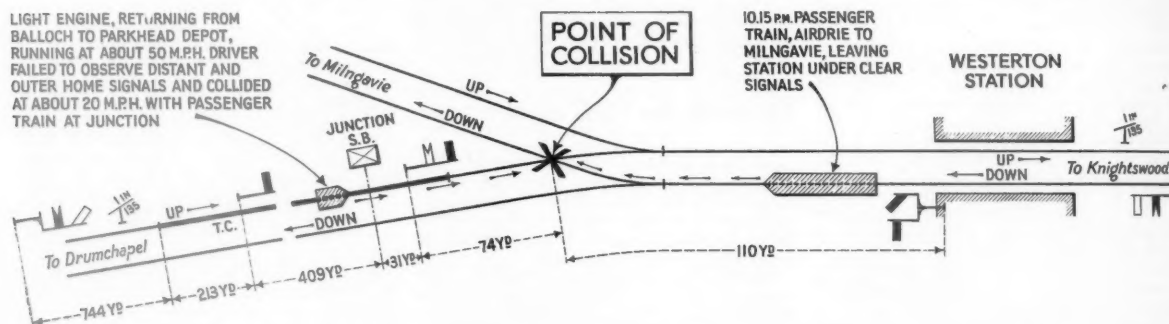
The driver was questioned closely about his failure to see the signals and could not account for it, although he remembered seeing the lights of two previous stations. It was raining heavily and he had closed the cab side windows but visibility was good. He was definite that he did not "nod off"; he was not tired and was feeling well, with "no undue worries" at home. He said he had not been talking with the fireman immediately before the

ing office and knew where to find the telephone number for ambulances, but had been given no instructions about action in an emergency, either by the relief or permanent stationmaster.

The stationmaster did not hear the collision. He was preparing for bed when two ladies called and told him of the accident; he dressed immediately and went to the site and on the way saw an ambulance leaving. (This was the first, at 11.35.) A policeman at the junction said that, as far as he knew, all passengers were out of the train. He ascertained that the signalman had been in touch with Control, who had made arrangements for a bus. He asked if a doctor had been requested, but it was by then obvious none was required; he returned to the scene to make another search in case any passengers had been missed.

He was away from the station when the porter took up duty there, or he would have explained the contents of the various circulars to him, but had not done that on his return or explained them to the signalman, who had been there nine months.

LIGHT ENGINE, RETURNING FROM BALLOCH TO PARKHEAD DEPOT, RUNNING AT ABOUT 50 M.P.H. DRIVER FAILED TO OBSERVE DISTANT AND OUTER HOME SIGNALS AND COLLIDED AT ABOUT 20 M.P.H. WITH PASSENGER TRAIN AT JUNCTION



man, and two arrived at the station at 11.30, leaving again within 15 min. A bus reached there at 12.25 a.m. to convey remaining passengers home. Up and down main and down branch lines were blocked but reopened at 7.10 next evening. It was dark and stormy with a heavy shower, but visibility of signals was good. The accompanying diagram shows the lines, signals, and so on, essential to an understanding of the case.

Course of Events and Evidence

The passenger train started smartly from the station and neither driver nor fireman saw the approaching engine before the collision.

The signalman at the junction box said he accepted the engine and received "line clear" for it from the box in advance; he had set the junction and cleared his signals for the train and made no attempt to clear any for the engine. Seeing the track circuit become occupied he assumed it would stop at the outer home, but then saw its headlights between that signal and his box. He immediately reversed the branch line home signal, hoping to stop the train but realised it had passed it. He waved a red hand lamp from the window but did not believe the light engine crew saw it, for it passed at the speed of a through train. He had no time to put down detonators and described the collision as "pretty heavy."

accident. He was, he agreed, possibly driving faster than the 45 m.p.h. allowed for light engines on this section, to reach shed in time for the fireman to catch public transport home. He had taken no alcohol at Bridgeton Cross nor brought any with him.

The guard of the passenger train to Balloch said he spoke to the driver at Bridgeton Cross, who did not appear to have taken any drink. That run was normal, with all stops correctly made.

The driver is 58, driving nearly 27 years with a clear record; he knew the line well. His sight and health were good.

Events after the Accident

At 11.2 the signalman telephoned to Control saying the situation was serious; asked to find out more information he went to the site. At 11.10 he asked Control for ambulances. Neither stationmaster nor porter were at the site and he tried to get into communication with the former by telephone, without success. He did not know whether there were any more casualties in the smashed compartment of the second coach but, returning to the site, met the porter and told him to call ambulances and the stationmaster. This man telephoned for ambulances and reached the stationmaster's house at about 11.30 and was told he was just coming. It had not occurred to him to call him sooner. He had seen notices in the book-

He could not understand why neither man had called him earlier.

The assistant controller received the first message at 11.3, and realised the situation was serious. Only ambulances were mentioned; these were summoned and also the steam cranes. The deputy controller took charge of the telephone, but did not ask whether a doctor was required, or any other services. From a message received at 11.10 it was assumed that all passengers were out of the first coaches and there were no serious injuries, but the signalman was not questioned closely nor asked if a doctor was needed. The police were, however, informed of the accident. From about 11.40 endeavours were made to get a bus sent, but this was only arranged later after personal intervention on the part of the until lately Chief Operating Superintendent of the Region.

Conclusions

The driver failed to observe and obey the signals; the weather was inclement but visibility of them good and they are well sited. He was driving somewhat faster than regulations permitted, but that had no bearing on the accident. He was in good health and insistent that he was not tired and did not close his eyes. If this was so the only explanation can be that he was thinking of other things instead of concentrating on his work. It is to

prevent such failures, the results of which can be so serious, that the British Railways A.T.C. system, recently approved, is to be installed on all main lines.

The relief arrangements did not reflect credit on a number of persons; no doctor was called, although it was not known for some time that there were no serious casualties. The stationmaster, whose house is only some 240 yd. away, was not summoned by railway staff for 30 min., 5 min. after being told of the accident by members of the public. He then arrived promptly on the scene, but did not get in touch with Control to ascertain what arrangements had been made until some considerable time later. It was nearly 1½ hr. before a bus arrived to take uninjured passengers home.

Eastern Region Rolling Stock and Equipment Exhibition at Noel Park

From September 12 to 14, the Great Northern Line of British Railways, Eastern Region, is to stage a rolling stock and equipment exhibition at Noel Park goods yard, on the Seven Sisters to Palace Gates branch. The exhibition will include items ranging from steam and diesel-electric locomotives to goods vehicles and civil engineering equipment. The first Type "2" Birmingham/Sulzer/Crompton 1,160-h.p. diesel-electric locomotive destined for service on the Kings Cross suburban lines will be on view, also the Class "A4" Pacific locomotive *Mallard*—holder of the world record for steam traction; visitors will be able to see A.T.C. demonstrated in the cab of the *Mallard*.

A large part of the exhibition is devoted to freight wagons, containers and freight handling equipment.

Sir Reginald Wilson, Chairman of the Eastern Area Board of the B.T.C., will open the exhibition on September 13, supported by Mr. G. F. Fiennes, Line Traffic Manager, Great Northern, and other officers. Civic dignitaries from local areas also will be present.

The exhibition will be open daily from 10.30 a.m. to 6.30 p.m. The 6d. entrance fee will be given to railway charities.

Exhibits

The following exhibits will be on view:—First class open plan saloon coach; second class sleeping car; tank "J52" class (0-6-0); suburban "C.12" class (4-4-2); Type "2" 1,160-h.p. diesel-electric locomotive; 350-h.p. diesel-electric shunting locomotive; standard class "9" 2-10-0 locomotive; Type "4" 2,000-h.p. diesel-electric locomotive; Pacific class "A4" locomotive; diesel multiple-unit train.

Twelve-ton container wagon; 24-ton covered hopper wagon; "Palbrick" wagon; shock-absorbing wagon; iron ore tippler wagon; bulk grain wagon; insulated fish van; hopper mineral wagon; container type "L"; 42-ton bogie bolster wagon; air-slide and 21-ton hopper wagons.

Collico cases; "BD" type container; "B" type container (light alloy); "A" type container; "AF" type container; "FM" type container; "BC" type container; "SW" type container (German design); "SW" type container (British design); "H" type container; "C" type container; "D" type container.

End-side door pallet van; 2-ton fork-lift truck; Ransome ITW tractor; Coles crane; Matisa tamping machine; Tote bins tilt; 13-ton high goods wagon; steam crane; and cinema van.

Re-equipment of Train Control Office, L.T. & S. Line

Installation of teleprinter network for train service information

To facilitate the dissemination of information concerning alteration to booked services to staff and passengers on the London-Tilbury & Southend Line, Eastern Region, British Railways, a teleprinter network has been introduced for the purpose of linking the control office staff at Fenchurch Street direct to the platform and booking office staff at most of the stations on the L.T. & S. Line. This equipment enables messages to be transmitted simultaneously to all stations connected to the network. Messages received over the network are displayed in a prominent position to the public. Full use is also made of loud-speakers and blackboards for publishing the information received over the network.

Some of the more important stations have two receivers. At Leigh, for example, one is in the booking office with the messages displayed at the ticket barrier and the other in the announcer's room. The messages are transmitted by the existing control staff at Fenchurch Street. In all, 29 teleprinters have been installed. The equipment was hired from the G.P.O. and installed by G.P.O. engineers under the supervision of Mr. R. A. Green, Signal Engineer, Eastern Region.

The master teleprinter is located in the Crosswall Offices at Fenchurch Street and is a Creed type No. 7B page printing machine. This machine provides a local record of every message sent.

The station machines are generally Creed type No. 11B tape printers, which print messages on to gummed tape. Two page printing machines have been installed at selected stations to enable comparison to be made between the two types.

The system is uni-directional, that is, stations receive messages but cannot transmit. Messages typed on the master teleprinter are transmitted as double current signals to a special unit at the London terminal in Faraday House. Here the signals are converted to voice frequency

for transmission over a telegraph channel to broadcast units at Grays (Thurrock) and Southend Post Office telephone exchanges. From the broadcast units the signals are converted to double current for distribution over separate pairs of wires to the local teleprinters.

Train Control Office

The new L.T. & S. Line train control office at Fenchurch Street has now been in operation for a few months. It replaces the old control which was located first at Plaistow and later at Fenchurch Street and which had become obsolete.

The installation at Fenchurch Street control office comprises six telephone key-boards and an associated apparatus rack. The keyboards and their equipment panels are of the jack-in type which facilitates rapid removal for replacement or maintenance purposes.

Selective control circuits are used for controlling traffic over the four sections of line as follows:—No. 1 section, Fenchurch Street to Ockendon; No. 2 section, Upminster to Shoeburyness; No. 3A section, Little Ilford to Upper Holloway; No. 3B section, Barking to Pitsea.

Between Fenchurch Street and Shoeburyness there are 60 calling points and as this would overburden telephone circuits it was necessary to divide this section into two parts. When the line is electrified, however, the considerable reduction in the number of signalboxes will make it possible to encompass the complete section on one circuit.

To call a station the controller dials the first and third digits of the selector code which are stored in the apparatus. The full selector code is then transmitted out to line at correct speed and waveform, the second digit being automatically inserted to complete the constant total.

During busy traffic periods the controller monitors the line but should he leave the circuit, stations can press a



Controller's telephone keyboard in the re-equipped train control office at Fenchurch Street, Eastern Region, British Railways

calling key to indicate to the controller that he is required. The operation of the calling key lights a lamp on the keyboard associated with that circuit.

Local extension telephones are also connected to the keyboards for the use of the District Officers, who can be connected to other lines. The lines are provided to the Liverpool Street, Kings Cross and St. Pancras controls and to the Motive Power Depots at Shoburness, Plaistow, and Tilbury. There is also a local circuit to the various operating staffs at Fenchurch Street Station for the purpose of advising last-minute platform alterations, and so on.

Severe Storm Disrupts Rail Services in Southern England

Serious interruptions to Kent suburban and main-line and to Brighton main-line services were caused by severe thunderstorms which broke over southern England last Friday night. A section of the London Underground was also affected. The storm damage was stated to have been among the worst ever experienced by the Southern Region of British Railways.

The Brighton main-line was completely blocked by a fall of chalk between Coulsdon North and Earlswood. Trains were diverted via Redhill, but were further delayed by six trees which fell on the line between Salfords and Horley.

At Reigate there was a suspected subsidence of the line, accompanied by flooding which persisted until early Saturday morning, the line being reopened at 6.20 a.m. Chalk which fell on to both tracks at Shoreham, Kent, was cleared during the night and the lines were reopened for traffic at 2 a.m. Saturday morning. Flooding interrupted services at Blackheath, Woolwich Dockyard, and Beckenham Hill.

Serious Earth Slips

The most serious damage was caused by earth slips at St. Mary Cray and between St. Mary Cray and Swanley and at

both ends of Sevenoaks Tunnel. The last mentioned was caused by the floodwater which rushed through the tunnel with considerable force, carrying with it a large quantity of ballast and earth. Traffic over these sections was not resumed until Monday morning, and severe speed restrictions were enforced.

Flooding or earth slips also interrupted services on the Portsmouth line between Haslemere and Liphook and between Liss and Petersfield. At Clockhouse Station, Beckenham, flood waters rose 2 ft. above the tracks, and passengers were directed from Clockhouse to Beckenham Junction.

Lightning struck the Reigate station-master's house and a signalbox at Sanderstead, Surrey. Lightning also caused signal failures and the "time interval" system of controlling trains had to be resorted to on the East Grinstead and Tunbridge Wells line.

Passengers Stranded

About 1,300 passengers were stranded all Friday night at Victoria and some 100 at Charing Cross Stations. Special buses were arranged for some, but long-distance travellers were allowed to sleep in the trains and waiting rooms, and the refreshment rooms were kept open all night. In contrast, the Waterloo main-line services were "hardly affected at all."

Flooding at Kensington High Street Station (L.T.E.) stopped the service between Gloucester Road and Edgware Road for 85 min.

L.M. Region Affected

The London Midland Region was also affected by the disruption to the Southern Region services. About 130 passengers travelling by through train from Derby to Ramsgate on the Friday night had to be diverted to Marylebone. The waiting rooms at Marylebone were kept open all night and the cafeteria car on the train continued to serve refreshments. The Region also offered to take the train back to Derby, but the passengers decided against it. Efforts were also made to organise road transport to Ramsgate, but weather difficulties prevented this.

Staff and Labour Matters

Railway Wages Talks

Representatives of the British Transport Commission and of the three railway trade unions met in London on September 9 to discuss the proposed inquiry into the proposed comprehensive examination of the railway wages structure. It is understood that the discussions centred on the question as to who should be the chairman of the independent body of inquiry and what the terms of reference should be. The talks were adjourned until next Tuesday.

Trades Union Congress

Delegates to the annual Trades Union Congress reaffirmed unanimously on September 4 their opposition to wage restraint and the Government's economic policy. The economic debate was opened by Mr. Alan Birch, Chairman of the General Council's economic committee. Since the last annual congress, he said, unemployment had grown and industrial relations had worsened. This had been brought about deliberately by the Government, which had abandoned the principle of full employment.

Industrial relations had deteriorated also because of the Government's influence. It had brought direct pressure to bear on wage negotiations and machinery, especially in the nationalised industries, and the impression had unfortunately been created that arbitration was no longer independent. Industrial peace had been maintained because of the existence of machinery for voluntary agreement. It was urgently necessary to remove any doubts about the independence of this machine.

It was the unions' right and duty, said Mr. Birch, to criticize the Government. But if the delegates did no more than criticize and strike a fighting attitude on wages, they would have failed their members. They would reject wage restraint and demand freedom for collective bargaining, but individual union executives and conferences would have to decide tactics. There would be sympathy and support among unions for one another, but decisions of the congress could not be regarded as committing them to industrial action.

Mr. F. Hayday (National Union of General & Municipal Workers) moved a resolution calling on the General Council to raise with the Government the whole question of the continuation of collective bargaining machinery in the nationalised industries and public services and, in particular, the effect of Ministerial influence on questions dealing with terms and conditions of employment and the extent to which these industries had freedom to fix their own price structure to enable them to pay wages and salaries comparable with other industries.

The resolution was carried unanimously. Mr. Frank Cousins (General Secretary of the Transport & General Workers' Union) moved that congress reaffirm the wages policy declarations adopted by the 1956 and 1957 congresses, since the Government's economic policy continued to be directed towards the limitation and restriction of wage claims, particularly in the nationalised industries. The main headings of the previous congress resolutions had been to condemn the Government's policy to reject wage restraint while prices and profits were uncontrolled, to reaffirm the unions' belief in unfettered voluntary collective bargaining, and to stress the need for a Labour Government.



Sevenoaks Tunnel, Southern Region, showing land slip and material deposited across tracks after flooding

During 1958, he said this had been challenged, especially in the circumstances of the London bus strike. Mr. Cousins reviewed the events which preceded the strike and spoke of negotiations which had been conducted patiently but which were completely abortive because of the Government's influence. Explaining the union's attitude to the Industrial Court's award, he said that if they had agreed in advance to accept it they would have been back with compulsory arbitration, which the unions had so long resisted. When the court awarded 8s. 6d. to some of the workers and nothing to the rest the feeling against accepting it was strongest among those who would have gained by it. The L.T.E. had said that it could not agree to an increase for the lower-paid men because it would have an effect on wages elsewhere, such as those being negotiated in the railway and engineering industries. It would not give any increase to the country busmen because it would have affected workers employed by privately-owned companies.

There had been loose talking about strikes, but the situation was not helped by the suggestion from the General Council that industrial action was not quite "done." The T.G.W.U. did not like strikes either, because they were not the most intelligent way of dealing with things. But if there were no alternative except agreeing to have no wage increase they would not hesitate to take such action as and when required.

Mr. F. Foulkes, President of the Electrical Trades Union, seconding the motion, said that it was foolish to expect statutory control of profits with an employers' government at Westminster, so the unions must fight for higher wages. This year's events had shown the need for a planned approach on wages throughout industry.

Mr. W. J. P. Webber (Transport Salaried Staffs' Association) said that he had no quarrel with the terms of the motion, but there were some problems of interpretation. The second, Mr. Foulkes, seemed to be proposing a wage policy for the movement. They were rejecting wage restraint but not responsibility in the submission of claims. The delegates had rightly rejected earlier a proposal for a national policy and a fighting fund because they were not yet ready to surrender autonomy in the timing and prosecution of claims. It would be wrong and dangerous for the General Council to support claims and call on other unions to help, perhaps withdrawing labour over a wide field. The council might even find themselves supporting conflicting claims.

The unions were not prepared to give blank cheques on their resources in men and money regardless of their own rules, agreements and policies. They could not break industrial agreements at the behest of the General Council. The sanctity of agreements could not be a matter of one-way traffic. His own union, said Mr. Webber, would support others engaged in disputes, but only subject to their rules, agreements and responsibilities to their own members.

The motion was unanimously approved.

Congress agreed to remit to the General Council a motion dealing with the shorter working week. This noted with concern the struggle of many industries to bring about a 40-hour week, and in view of the strong resistance by employers, asked the General Council to help to convene a special conference of the interested unions with the aim of reaching a unified policy for the promotion of a shorter working week.

Contracts and Tenders

British Transport Commission contracts for diesel shunting locomotives and parcel vans

The British Transport Commission has placed the following contracts:

Ruston & Hornsby Limited, Locomotive Division, Lincoln: four diesel-electric shunting locomotives of 165 h.p., type "165 DE" and three diesel mechanical shunting locomotives of 88 h.p., type "88 DS"

Gloucester Railway Carriage & Wagon Co. Ltd.: eight diesel parcel vans 63 ft. 6 in. in length

The shunting locomotives will be allocated to the Civil Engineers' Depots of the Western and North Eastern Regions. The parcels vans, which are powered by two 230 h.p. engines and equipped with driving cabs at each end, will be used in areas of the London Midland and Western Regions where diesel working is already being developed.

The British Transport Commission, South Wales Docks, has placed the following contracts:—

Seawork Limited: provision of two new twin-screw diesel-engined tugs for the South Wales Ports

Demolition & Construction Co. Ltd.: repairs to west wharf, Prince of Wales Dock, Swansea

G. Percy Trentham Limited: repairs to wharf at No. 14 Hoist, King's Dock, Swansea

Carter-Horseley (Engineers) Limited: renewal of sheeting and repairs to steelwork at "B" shed, Kings Dock, Swansea

Penarth Pontoon, Slipway & Ship-repairing Co. Ltd.: general overhaul of s.d. *Peeress*

Stelcon (Industrial Floors) Limited: paving for No. 2, 3 and part of No. 4 sections, South Quay, Newport.

British Railways, Southern Region, has placed the following contracts:—

Meridian Airways Limited, Shoreham Airport, Sussex: aerial survey, Steyning Branch Line

The Limmer & Trinidad Lake Asphalt Co. Ltd., Eastleigh, Hants: resurfacing of roads and access paths, Eastleigh Carriage & Wagon Works

Drake & Gorman (Contractors) Limited, London, S.W.1: modifications to electrical installation, Cannon Street—Dowgate Hill Offices

W. H. Gaze & Sons Ltd., London, S.W.15: resurfacing and drainage, Staines Central Goods Yard

C. & T. Painters Limited, London, N.W.10: renovations, Brockenhurst and Redbridge Stations

Wm. Latimer & Co. Ltd., Newcastle-upon-Tyne 2: renovations, Boxhill, Holmwood and Ockley Stations

W. R. Payne & Sons Ltd., Shipley, Yorks: renovations, Canterbury East Station

W. H. Gaze & Sons Ltd., London, S.W.15: paving to platforms, Redhill Station

Service Electric Co. Ltd., Stanmore, Middx: alterations and additions to electrical installation, Cannon Street—Queen Street Offices

James Longley & Co. Ltd., Crawley, Sussex: new gymnasium, Walton-on-the-Hill, St. Cross School

Leonard Fairclough Limited, London, N.W.5: reconstruction of bridge, Streatham

W. R. Payne & Sons Ltd., Shipley, Yorks: renovations, Maidstone West Station

James Lovell & Co. Ltd., Crawley, Sussex: accommodation for S.P.D. traffic, Salford

Demolition & Construction Co. Ltd., London, S.W.1: reconstruction of platform walls Cowden and Hever Stations

Carter-Horseley (Engineers) Limited, Waddon, Surrey: renewal of transverse bracings to trestles, Okehampton—Meldon Viaduct

George Wimpey & Co. Ltd., Hayes, Middx: soil survey, Redbridge Viaduct and Southampton Terminus

Fredk. Haydon Limited, Tunbridge Wells, Kent: installation of heating and hot water supply, Tonbridge Motive Power Depot

The Tees Side Bridge & Engineering Works Limited, Middlesbrough, Yorks: structural steelwork, Victoria Eccleston Bridge

John Mowlem & Co. Ltd., London, S.W.1: erection of diesel-electric locomotive depot, together with ancillary works, Ashford (Kent)

Val de Travers Asphalt Co. Ltd., London, E.C.4: resurfacing and surface dressing of roads, footpaths and station platforms, London (Eastern) District

D. Anderson & Son Ltd., London, E.3: platform roof decking, West Wickham Station.

British Railways, Eastern Region, has placed the following contracts:—

I.T.D. Limited, London, W.11: supply and delivery of two fork lift trucks with battery chargers and special jib attachment at Chesterfield

Costain Concrete Co. Ltd., London, S.W.1: supply and delivery of six prestressed concrete footbridges

Clough, Smith & Co. Ltd., Crawley, Sussex: supply, delivery and installation of E.H.V. and M.V. cables at Parkeston Quay

Aerocem Limited, London, W.1: supply and delivery of four sets of grouting equipment.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Korea:

35 tank wagons, unlined, welded steel, 10,000 gal. capacity.

The issuing authority and address to which bids should be sent is the Office of Supply, Government of the Republic of Korea, Seoul, Korea. The tender No. is 89-33-233-9-80188. This purchase will be financed by the International Co-operation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is September 24, 1958. The Board of Trade reference is ESB/21779/58/I.C.A.

From Iran:

170 tons of bolts for wooden sleepers.

The issuing authority is the Iranian State Railways. Prices should be quoted c. & f. A deposit of 250,000 rials is required. The closing date is November 5, 1958. The Board of Trade reference is ESB/21991/58.

Further details regarding the above

tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

Further proposals have been approved by the Italian Minister of Transport for the improvement and development of the Italian State Railways (see editorial reference in our August 29 issue). The main emphasis is on electrification and includes the following lines: Pistoia-Lucca-Viareggio, Lucca-Pisa, Usmate-Bergamo, Catania-Siracusa, Alessandria-Novara-Arona, Voghera-Piacenza, and Bressana-Broni. Other proposals authorised include track renewals, automatic signalling, telecommunication systems, and the purchase of 10 diesel shunting locomotives, and 30 diesel-electric main-line locomotives.

Whilst the bulk of this demand will no doubt be met from indigenous suppliers, there may be opportunities for United Kingdom manufacturers. Full details of the proposals can be obtained from the Export Services Branch of the Board of Trade quoting reference No. ESB/21487/58.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the closing date of the call for tenders from Sudan for signalling equipment, recorded in August 29 issue, is September 16, 1958.

Notes and News

Scottish Region First Railbus Service.

A diesel railbus will be used to operate the service between Gleneagles, Crieff and Comrie, Scottish Region, from Monday. The vehicle is fitted with retractable steps, thus allowing it to serve areas where no passenger stations exist, such as Strageath and Pittenzie level crossings, between Gleneagles and Crieff, where stops will be made. Rail tickets can be obtained from the guard on the train. It is hoped that these "whistle stops" will prove beneficial and enable sparsely populated areas to have a rail link which would not otherwise have been possible.

First Birmingham/Sulzer Type "2" Delivered to Eastern Region.—The first of 20 Type "2" diesel-electric locomotives being built by the Birmingham Carriage

& Wagon Co. Ltd. has been delivered to the Eastern Region of British Railways for use on the Great Northern Line. The locomotive, which weighs 77½ tons in working order, incorporates a 1,160-b.h.p. six-cylinder Sulzer engine manufactured by Vickers Armstrong (Engines) Limited at Barrow-in-Furness. Electrical equipment is by Crompton Parkinson Limited including the main generator and four driving motors. Other particulars of these Bo-Bo locomotives, the first of which, No. D5300, is seen in the accompanying illustration, are: length over buffers, 50 ft. 9 in.; tractive effort, maximum, 42,000 lb., continuous, 30,000 lb. at 11 m.p.h.; maximum designed speed, 75 m.p.h.

East Indian Railway Officers' Dinner, 1958.

The 55th annual dinner of the East Indian Railways officers will be held at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, on Wednesday, September 24, at 6.30 for 7 p.m. The principal guest this year will be Colonel Sir Ralph Emerson. The price of tickets is 22s. each and can be obtained from the Hon. Secretary, Mr. R. C. Harvey, Aros Thona, Copthorne, Sussex.

Progress of Glasgow Suburban Electrification.

The laying of foundations for the overhead wiring system for the Glasgow suburban electrification scheme has been continued this week, when work has been carried out between Cardross and Craigendoran. This has been effected between the peak morning services and evening services. During the period there have been some slight delays to morning and afternoon trains on the Glasgow and Helensburgh line.

Stations Closed in L.M. Region.

Services will be withdrawn as from September 15, from certain stations in the London Midland Region of British Railways. In the following list of stations concerned, P denotes that passenger and G that goods services are to be withdrawn:—Embleton (P and G), between Keswick and Cockermouth; Huyton Quarry (P and G), between Liverpool Lime Street and Earlestown; Halebank (P and G), between Widnes and Liverpool Lime Street; Warrington Arpley (P and G), a quarter of a mile from Warrington Bank Quay; Longsight (P), between Manchester London Road and Stockport; Marchington (P and

G), between Uttoxeter and Burton-on-Trent; Buxworth (P and G), between New Mills and Chinley; and Oakley (P), between Bedford Midland Road and Wellingborough Midland Road. Longsight Station, between Manchester London Road and Stockport, will continue to handle excursion traffic for Belle Vue. Arrangements are being made for C. & D. and parcels traffic. Alternative passenger facilities are provided by bus services in the areas concerned.

Inauguration of Electronic Computer Installation at Darlington, N.E. Region.

Mr. T. H. Summerson, Chairman of the North Eastern Area Board, British Transport Commission, will formally inaugurate a new Hollerith electronic computer installation in the offices of the North Eastern Region, British Railways, at Stoopersdale, Darlington, on September 15.

Diesel Train Excursions to Rolling Stock Exhibition at Noel Park.

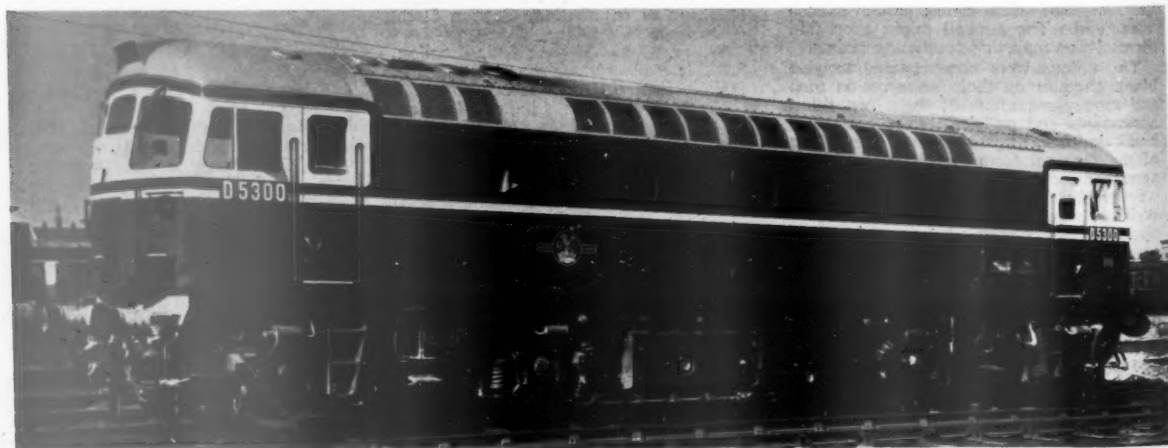
British Railways, Eastern Region, is to run two special diesel train excursions on September 13 to enable passengers living at places served by the Great Northern line to visit the rolling stock and equipment exhibition at Noel Park at cheap fares.

New Refreshment Terrace at Euston Station, L.M. Region.

A Continental style refreshment terrace was opened last Monday on the departure area at Euston Station, British Railways, London Midland Region. There is a kiosk for serving packed meals for passengers in a hurry and an enclosure with tables and multi-coloured umbrellas. Flowers and shrubbery surround the enclosure, which is floodlit throughout the 24-hr. Air-conditioning and central heating is also available. The packed meals for the train are priced at 2s. 6d. and 3s. 6d., and during the winter hot soups and hot sandwiches will be available to take on the train. With the opening of this terrace, Euston Station now provides seven establishments around the station providing refreshment, including an all-night self-serve cafeteria and a restaurant.

Five Projects Planned for Dundalk.

Some details of the work which will be carried out in the old G.N.R.(I.) plant at Dundalk were given last week by Mr. A. P.



The first Type "2" 1,160-h.p. Birmingham-built diesel-electric locomotive D5300 for service on the Great Northern Line of the Eastern Region at Hornsey Motive Power Depot

Reynolds, Chairman of the Dundalk Engineering Company, which was set up to find new industries for the Works. He states that there were five projects planned, each with different companies. These were a steel foundry for the making of high-class steel for cutlery, razor blades and steel castings; the manufacture of a light car which is expected to commence next month; the manufacture of agricultural implements; the manufacture of chassis for heavy duty road vehicles for passengers and goods; and a general engineering works which will include a section to carry out contracts secured for C.I.E. for the repair and maintenance of all rolling stock to be taken over from the G.N.R.(I.). He pointed out that the companies would be distinct but interdependent. Pending the reconstruction redundancy would continue and in addition to the existing 250 there would be a further 150 to 200 declared redundant.

London Transport Travel Plans for "Battle of Britain" Air Display at Biggin Hill.—Special buses and coaches will convey spectators to the "Battle of Britain" air display at Biggin Hill on Saturday, September 20. Over a quarter of a million visitors are expected to attend. Two shuttle services of double-deck buses will run to the aerodrome from Bromley North Station and Westerham and extra Green Line coaches will run from Central London and Sevenoaks. Bus excursions will also run on 25 special routes to the display picking up passengers at 72 points in and around London. The service from Bromley North Station is for the large number of visitors expected to come from the Southern Region trains.

North Eastern Region Holds Schoolboys' Study Courses for Railway Careers.—This week parties of public school and grammar school boys have taken short study courses in the North Eastern Region of British Railways. During the courses the boys have seen many of the careers now open to them on British Railways. One party, with Darlington as its base, visited railway installations at Darlington, Shildon, York, South Gosforth, Thornaby and Newcastle and studied mechanical, electrical and carriage and wagon engineering. A second party based on Whitley Bay studied the working of the Traffic Department, covering commercial, operating and motive power activities. This party visited stations, marshalling yards, signalboxes, motive power depots and a traffic control office in the Newcastle area. A third

party, working from York, studied the work of the Signal Engineer's department including an explanation and demonstration of train control signalling methods and telecommunications system. Visits were made to signalboxes, new signalling and telecommunications installations and the automatic telephone exchange at York. Besides the practical demonstrations the boys also received instruction by means of talks and films. The visits were arranged in conjunction with the Public Schools Appointments Bureau and the Central Youth Employment Executive of the Ministry of Labour.

British Waterways Locks and Bridges Competition.—The Ritchie Trophy Competition, inaugurated this year by British Waterways for the best tended lock or canal bridge, has been won by Mr. W. Garner, Souby Three Locks, near Leighton Buzzard, Grand Union Canal, South Eastern Division. The trophy, which is a rose bowl, was presented to British Waterways by Miss J. M. Ritchie, of West Leyburn, Yorkshire, a waterways enthusiast. The competition is open to both lock and bridge keepers in the four divisions of British Waterways, and is judged on the operating efficiency, appearance and cleanliness of the locks and bridges, and the general condition of the surrounding sites, including the cultivation of gardens which contribute to their appearance. Lady Kerr, wife of Sir Reginald Kerr, General Manager of British Waterways, made the presentation to the winner at Souby Three Locks on Tuesday in the presence of Miss Ritchie and the General Manager.

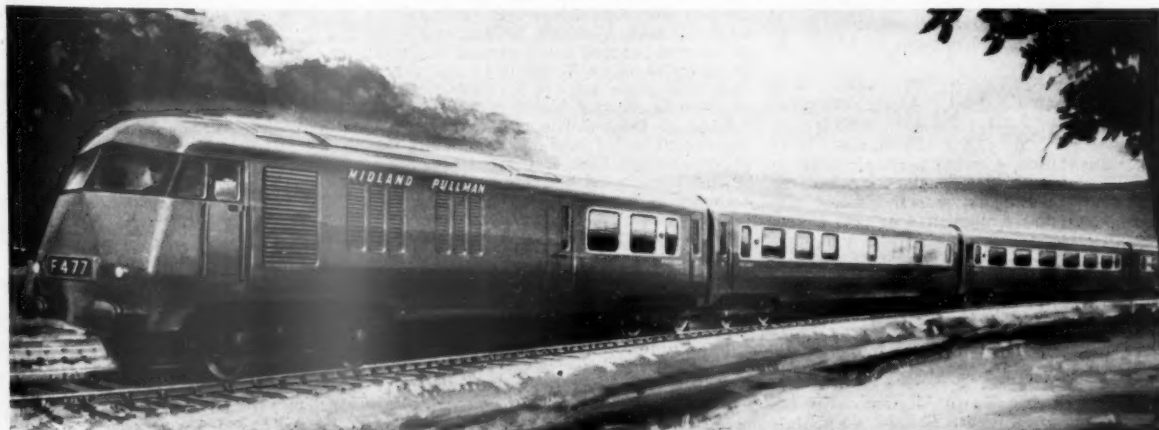
Exhibitions of Modern Freight Rolling Stock in North Eastern Region.—British Railways, North Eastern Region, is to hold exhibitions of modern freight rolling stock during September and October. These will be held as follows:—Stockton Passenger Station, September 23-25; Tyne-mouth Goods Depot, September 30-October 2; Hull Paragon Station, October 7-9; and Leeds Wellington Street Goods Depot, October 13-18; all dates inclusive. In conjunction with the Leeds Freight Rolling Stock Exhibition there will be a selection of modern passenger rolling stock on exhibition at No. 14 Platform, Leeds City Station. The exhibitions are to be open to the public without charge. The freight rolling stock exhibits include a special wagon for bulk cement, an international ferry wagon, containers and a prototype timber wagon designed for conveying "packaged" timber, this latter is a

very recent development in the North Eastern Region. A brochure, which describes each of the exhibits, will be available free.

British Timken Limited Second Overseas Sales Conference.—The second overseas sales conference to be held by British Timken Limited took place recently at the headquarters of the company. It was attended by representatives of all the overseas subsidiaries and distributors. Over 100 delegates were present, and they listened to papers on various aspects of the company's business read by senior executives of British Timken Limited and Fischer Bearings Co. Ltd. In opening the conference, Sir John Pascoe, Chairman, & Managing Director, described the growth of the company in the last 25 years. He went on to say that the purpose of the conference was to discuss with members of their overseas organisation, ways of increasing still further, the very considerable export trade enjoyed by the group.

Deadman and "Vigilance" Control Systems.—In last week's issue, we commented editorially on the function of the deadman control as a safety device. Reference was made to the recent case of the L.T.E. District Line train which ran through South Kensington Station because the motorman had apparently collapsed over the control, and to the further advantage of "vigilance" form of control. It has been pointed out that the L.T.E. train in question was not in any danger because the trip-cock device fitted to all L.T.E. stock prevents overrunning of a signal set at danger. Many main-line railways, however, do not have any form of protection of this kind and it was with such working in mind that the various "vigilance" control systems were devised, and our remarks referred to that.

London Midland Region Inter-City Diesel Pullman Trains.—The accompanying illustration shows a reproduction of an artist's impression of the inter-city diesel-electric Pullman multiple-unit trains to be introduced in Autumn, 1959, between Manchester Central and St. Pancras. These sets will run from Manchester each morning and return from St. Pancras in the evening. The trains will call at Cheadle Heath in each direction. The service will be maintained by two six-car trains, with accommodation for only first class travellers; meals will be served at all the 150 seats. Time for the journey will be around 3 hr. The trains, it is understood,



Artist's impression of diesel-electric Pullman diesel train for London Midland Region

will be air-conditioned, and have heat and sound insulation and double-glazed windows.

Closure of Malton-Driffield Goods Branch.

—British Railways, North Eastern Region, announces that, because of the loss which is being incurred, it is necessary to withdraw freight train facilities and close the line from Malton to Driffield from October 20. The stations to be closed are: Settrington, North Grimston, Wharham, Burdale, Sledmere & Fimber, Wetwang, and Garston. Approval for this measure has been given by the Transport Users' Consultative Committee for the Yorkshire Area and also by the Central Transport Consultative Committee. Goods traffic will be dealt with by British Railways road motor services operating from Malton and Driffield.

Forthcoming Meetings

September 15 (Mon.).—Railway Correspondence & Travel Society, Merseyside Branch, at the Woodhead Hotel, Birkenhead, at 7.30 p.m. Paper on "A Somerset Mixture," by Mr. R. Dyer.

September 16 (Tue.).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "The Leek & Manifold Railway," illustrated by lantern slides, by Dr. J. R. Hollick.

September 17 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, at 5.30 p.m. Mr. Robert Arbuthnot's Presidential Address.

September 18 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Film show, including "The mechanical maintenance of points and crossings," and "Fitted freight."

September 19 (Fri.).—Railway Correspondence & Travel Society, at the Railway Clearing House, Eversholt Street, N.W.1, at 7.15 p.m. Illustrated lecture on "The Talylyn Railway," by the Earl of Northesk.

September 20 (Sat.).—Railway Correspondence & Travel Society, South of England Branch, at the C.B.B. Employees' Club, Palmerston Road, Boscombe, at 5.30 p.m., by Mr. E. A. Course.

September 20 (Sat.).—Permanent Way Institution, East Anglia Section. Visit to Potters Bar new tunnel.

September 20 (Sat.).—Permanent Way Institution, London Section. Visit to London Airport engineering base to inspect hangars, workshops and aircraft under maintenance.

September 21 (Sun.).—South Yorkshire Rail Tour No. 4.

September 22 (Mon.).—Historical Model Railway Society, at the Railway Tavern, Liverpool Street, London, E.C.2, at 7 p.m. Paper on old Irish railways entitled "Locomotives and Leprechauns," by Mr. R. G. Dettmar.

September 23 (Tue.).—Railway Correspondence & Travel Society, West Midlands Branch, at 64, Holyhead Road, Coventry, at 7.30 p.m. Mr. A. F.

Cook will discuss locomotive development on the former L.M.S.R.

September 24 (Wed.).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "Permanent way section manning and its relation to track standards," by Mr. W. A. Hissey.

September 24 (Wed.).—Railway Correspondence & Travel Society, West Riding branch, at the British Railways Social & Recreation Club, Aire Street, Leeds, 1, at 7.30 p.m. Paper by Mr. R. N. Hardy, on "Stewarts Lane 1952-1954," illustrated.

September 29 (Mon.).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "The Lynton and Barnstaple Railway," by Mr. R. E. Tustin.

September 30 (Tue.).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "The North Eastern Region of British Railways," by Mr. R. A. Savill.

Railway Stock Market

Stock markets have shown a rallying trend, the recent reaction in values having attracted buyers, despite the uncertainties of international news. Buyers are apparently taking more than a short view and remain hopeful that in due course the bank rate will go down further to 4 per cent. Interim profit figures and progress reports from many companies show that profits are running below those of a year ago because of increased competition both in home and export markets, but the disposition is to assume that dividends are likely to be maintained in the majority of cases and that world trade will show an upward trend next year.

Business in foreign rails has remained in a limited scale, but there was rather more attention given to Antofagasta ordinary stock, which strengthened fractionally to 14½, though the preference stock eased slightly to 28½. United of Havana second income stock remained at 6½ and San Paulo Railway 3s. units were again quoted at 3s. Costa Rica ordinary stock has been dealt in around 16½ and the 6½ per cent first debentures around 75½, while Chilean Northern 5½ per cent first debentures changed hands around 46½, and in other directions, Paraguay Central 6 per cent debentures marked 11. Brazil Railway bonds changed hands at 5½.

West of India Portuguese capital stock transferred at 78½, and Nyasaland Railways shares at 12s. Emu Railway 4½ per cent debentures showed business at 40½ xd.

Canadian Pacifics were helped by the better trend of Wall Street markets, and at \$51½ compared with \$51 a week ago; the preference stock was 54½ and the 4 per cent debentures 66½. In other directions White Pass shares were fractionally better at \$13½. Mexican Central "A" bearer debentures were 70.

Rather more business was again reported in shares of locomotive builders and engineers with Beyer Pracock 5s. shares at 8s. 4½d. at which the yield is over 9 per cent on the basis of last year's 16 per cent dividend. Charles Roberts 5s. shares at 9s. 9d. yield over 7½ per cent. Westing-

house Brake have strengthened from 38s. 6d. to 39s. Elsewhere, Birmingham Wagon shares have risen from 18s. 6d. to 19s. 3d., North British Locomotive were quite well maintained at 12s. 3d.

Pressed Steel 5s. shares were firm at 18s. 3d. and Dowty Group 10s. shares good at 37s. 9d., their highest for the year, but T. W. Ward at 80s. have not quite held best levels despite higher dividend hopes in the market, and Ruston & Hornsby have eased to 23s., but Vokes 5s. shares remained firm and held their rise to 17s. 3d. G. & J. Weir 5s. shares were 16s. 1½d., and Whessoe 5s. shares 27s. 4½d. Elsewhere, British Timken at 50s. 6d. were at their best so far recorded this year. Tube Investments were 59s. 9d. and Glyndwed Tubes 5s. shares have strengthened to 17s. 10½d.

F. Perkins 10s. shares changed hands around 9s., David & United have been firm at 70s. xd and Ransomes & Marles 5s. shares 13s. 9d. but there was moderate profit-taking in steel shares, Stewarts & Lloyds easing to 25s. 9d., Dorman Long to 24s. 6d. and United Steel to 23s. 7½d. Among other shares, George Cohen 5s. shares strengthened to 10s. 6d. xd at which the yield is 5½ per cent on the basis of the maintained 12 per cent dividend, and despite the past year's lower profits, this dividend is covered over three times.

Braithwaite & Company shares held steady at 26s. 6d. on further consideration of the financial results, the maintained 8 per cent dividend and the special 2 per cent tax free payment from capital reserve. Wellman Smith Owen shares advanced to 98s. 9d. on the record results, the raising of the dividend from 22½ per cent to 25 per cent and one-for-one scrip issue. W. G. Allen 5s. shares were 8s. 6d. on further consideration of the past year's figures; the unchanged 12½ per cent dividend is covered 2½ times. Sheepbridge Engineering 5s. shares were 8s. 3d. xd to yield a generous 9½ per cent on last year's 16 per cent dividend.

Associated Electrical have moved up from 53s. 3d. to 53s. 6d., English Electric from 56s. to 56s. 6½d. and General Electric were 36s. 3d. compared with 36s. a week ago. John Brown rose to 30s. 9d. on the good impression created by Lord Aberconway's annual statement.

OFFICIAL NOTICES

MAN with mechanical engineering knowledge, preferably some experience with diesel engines for railway use, and who can write clear, concise English, required for EDITORIAL STAFF of railway technical journal. Details of age, training, experience and salary required to Box 667, *Railway Gazette*, 33 Tothill Street, London, S.W.1.

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